

**Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
Washington, D.C.**

**In the Matter of**

**DETERMINATION OF RATES AND TERMS  
FOR DIGITAL PERFORMANCE OF SOUND  
RECORDINGS AND MAKING OF EPHEMERAL  
COPIES TO FACILITATE PERFORMANCES  
(WEB V)**

**Docket No. 19-CRB-0005-WR  
(2021-2025)**

**INTRODUCTORY MEMORANDUM TO THE WRITTEN REBUTTAL  
STATEMENT OF PANDORA MEDIA, LLC AND SIRIUS XM RADIO INC.**

Sirius XM Radio Inc. (“Sirius XM”) and its wholly-owned subsidiary Pandora Media, LLC (together with its predecessor Pandora Media, Inc., “Pandora”) hereby jointly submit this Written Rebuttal Statement to the Copyright Royalty Judges (the “Judges”) pursuant to 37 C.F.R. § 351.4. This joint submission includes the written rebuttal testimony of Pandora witnesses David Reiley and Jason Ryan, Sirius XM witness Thomas Barry, and expert witnesses Professor Carl Shapiro and Dr. John Hauser, as well as the rebuttal exhibits submitted herewith and the Amended Proposed Rates and Terms of Sirius XM and Pandora.<sup>1</sup>

**INTRODUCTORY STATEMENT**

The contrast between the rates and terms proposed by Sirius XM and Pandora on the one hand and SoundExchange, Inc. (“SoundExchange”) on the other is stark. While there are a number of other contributing factors, that contrast is driven principally by fundamentally different views of the Judges’ objective under the willing-buyer/willing-seller rate-setting standard. Consistent with the Judges’ precedents, Sirius XM and Pandora have proposed rates

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<sup>1</sup> Dr. Hauser’s written rebuttal testimony is jointly sponsored by Sirius XM, Pandora, and the National Association of Broadcasters (“NAB”). A copy of his rebuttal testimony is submitted as part of NAB’s Written Rebuttal Statement and incorporated by reference herein.

and terms that would emerge between a willing buyer and a willing seller in an effectively competitive market. Lip service aside, SoundExchange has not.

Time and again, the Copyright Royalty Judges have confirmed that the governing rate standard calls for a determination of what royalty rates would be in an effectively competitive market. *See, e.g., Determination of Royalty Rates and Terms for Ephemeral Recording and Webcasting Digital Performance of Sound Recordings (“Web IV”),* 81 Fed. Reg. 26316, 26332-34 (May 2, 2016). In *Web IV*, the Judges not only determined that the rates to be set for this statutory license, as an economic matter, should reflect the price levels that would emerge from price competition between and among record companies for performances of songs in their catalogs by noninteractive webcasters, they also found that conditions in this licensing market, as a factual matter, would support such competition in the absence of the statutory license.<sup>2</sup> 81 Fed. Reg. 26343. As explained in the rebuttal testimony submitted herewith, both of those determinations remain equally true today.

Flouting the Judges’ mandate to determine rates reflective of an effectively competitive market, SoundExchange once again has proposed rates and terms that would be attainable only through the exercise of complementary oligopoly power by the record company licensors and the absence of any price competition. Thus, SoundExchange’s economic expert Jonathan Orszag relies on agreements between interactive services and major record companies, even though the major record companies are conceded to be “must-have” suppliers for that market, and he does so without adjusting those rates (as was deemed appropriate in *Web IV*) to reflect the salutary

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<sup>2</sup> The D.C. Circuit rebuffed SoundExchange’s challenge to the Judges’ effective competition requirement, holding that, while the willing-buyer/willing-seller does not itself require a particular level of competition, the Judges were well within their discretion to set rates based on what would transpire under conditions of effective competition. *SoundExchange, Inc. v. Copyright Royalty Bd.*, 904 F.3d 41, 52-57 (D.C. Cir. 2018).

effect on price levels of effective competition. Professor Robert Willig, another of SoundExchange’s expert witnesses, offers a series of bargaining models wherein he assumes—incorrectly, as we show—that each of the major record companies is also a “must-have” supplier for *non-interactive* webcasters operating under the statutory license and, accordingly, that a non-interactive webcaster would be forced to shut down its service in the absence of a license from any one of them. Professor Willig does not make any effort to adjust the rates that emerge from his analyses to reflect the forces of effective competition either.

As Professor Shapiro explains in his written rebuttal testimony, the hallmark of an effectively competitive market is regular, significant price competition among suppliers for the patronage of buyers. In an effectively competitive market, one typically sees at least some sellers offering lower prices than their rival suppliers to gain market share, and one also typically sees buyers awarding a greater share of their purchases to suppliers that offer better rates and terms than other suppliers. There is no credible evidence of that type of rivalrous behavior in the interactive services market and substantial evidence of the significant steps taken by major record companies to prevent it. If a market controlled by multiple “must-have” sellers were considered effectively competitive, the concept of effective competition would have no meaning.

Sirius XM and Pandora’s rebuttal submission makes plain that Professor Willig’s economic modeling is both conceptually flawed and beset by faulty factual assumptions and computational errors. His most fundamental mistake is to assume that each of the major record companies is a “must-have” supplier for non-interactive streaming services such as those offered by Sirius XM and Pandora, such that the inability to obtain a license from any one of them would cause the service to shut down and all of that service’s listeners to divert to other sources of music. As shown in the written rebuttal testimony of Dr. David Reiley, a Principal Scientist at

Pandora, the loss of the licensed catalog of even a major record company has minimal negative listening impact on Pandora’s ad-supported tier of service—far from the death blow envisioned by Professor Willig. Dr. Reiley reports the results of a series of experiments conducted at Pandora, referred to as Label Suppression Experiments, to measure the effects (or lack thereof) of suppressing the content supplied by a particular record company on listening to Pandora’s ad-supported service over the six-month period from June 4, 2019 to December 4, 2019. These experiments enable Dr. Reiley to assess the outer bound of the potential loss of listening that would result from foregoing content from any of the subject record companies, including over the long term. In short, while Pandora would prefer to have access to content from all providers at all times, the effects on listenership of foregoing the content of any one supplier are quite limited and, therefore, Professor Willig’s assumption that Pandora would have to shut down its ad-supported service in the absence of a license from any of the majors is incorrect. As Professor Shapiro explains, Professor Willig’s faulty assumption that the major record companies are “must-have” suppliers for noninteractive webcasters—and his failure to account in any other way for salutary effect on prices of effective competition—cause Professor Willig to significantly overestimate the rates that would emerge from the hypothetical market at issue in the absence of the statutory license.

Professor Willig’s economic modeling is further compromised by other faulty assumptions as well. As described in the written rebuttal testimony of Jason Ryan, Pandora’s Vice President of Financial Planning and Analysis, Professor Willig relies on an overly optimistic projection of Pandora’s financial results prepared in 2017 as part of Pandora’s evaluation of various “merger scenarios” prior to its acquisition by Sirius XM, rather than the more recent and more reliable “Long Range Scenario” projections prepared and actually used by



Pandora and Sirius XM to inform their operation of the business. Professor Willig, moreover, makes numerous incorrect assumptions regarding Pandora subscriber counts and advertising revenue that are at odds with the financial models used to create the “merger scenario” projections on which he relies and that fail either properly to allocate costs across Pandora’s different service offerings (including off-platform services offered to third parties) or properly to categorize Pandora costs as fixed or variable for purposes of his marginal profit calculations. As Professor Shapiro explains, correcting for these flaws and other mistakes in Professor Willig’s opportunity cost calculation and in his underlying equations brings the rates emerging from Professor Willig’s models even closer to those proposed by Sirius XM and Pandora.

Professor Shapiro also responds to Professor Willig’s Shapley Value analysis. He explains that a Nash-in-Nash bargaining model (which both Professor Shapiro and Professor Willig utilize) better captures the sort of bilateral negotiations that the willing-buyer/willing-seller rate standard seeks to capture. He shows that Shapley Value, by contrast, is not a suitable methodology for rate-setting here because it fails to account for contracting externalities that would affect bargaining in this market, namely the effect on a supplier that chooses not to license if its competing suppliers do continue to license. If a cooperative game model is to be used at all, Professor Shapiro explains that the correct analysis is to calculate the Myerson Value, a variant of Shapley Value that accounts for contracting externalities in a way that Shapley Value does not. As Professor Shapiro shows, proper implementation of the Myerson Value model suggests much lower rates than the ones that SoundExchange has proposed.

Professor Shapiro also responds at length to the written direct testimony of Mr. Orszag. Mr. Orszag takes a different approach to analyzing rates than Professor Willig does—utilizing agreements between record companies and subscription interactive services as benchmarks for

rate-setting here rather than attempting to model bargaining outcomes—but his analysis comes no closer to establishing the rates that would emerge from negotiations between a willing buyer and a willing seller in an effectively competitive market. Mr. Orszag concedes (as he must) that the major record companies are “must-have” suppliers for the providers of subscription interactive services, as noted above, and yet he makes no adjustment to his benchmark rates for effective competition.

Mr. Orszag attempts to justify his failure to adjust the rates charged to subscription interactive services to account for the conceded complimentary oligopoly power of “must-have” record company suppliers in that market by claiming that Spotify and Apple have recently become “must-have” *buyers* for record labels and thus now possess countervailing bargaining power in their dealings with major record companies. There is, however, no credible evidence to support his claim. Neither Spotify nor Apple comprises a share of any major record company’s revenue sufficient to be considered “must have” for the record company, particularly when subscribers to such services can and would divert to other licensed sources to access the catalog of any “must-have” label in the event of a label blackout. That a digital music service such as Spotify or Apple may negotiate intensely against major record companies in an effort to secure lower rates or that Spotify or Apple may have certain points of bargaining leverage that it can use to entice a “must-have” supplier to offer a lower rate does not mean that the rates emerging from those negotiations reflect the workings of an effectively competitive market. As Professor Shapiro notes, monopolists routinely negotiate with their buyers and make concessions without sacrificing their ability to secure rates well above competitive-market levels. And members of cartels frequently compete with each other *on non-price dimensions* in order to secure greater shares of the spoils of the supra-competitive rates that they enjoy by virtue of their cartel power.

Mr. Orszag fails to present evidence that any of the major record companies are competing with each other on price terms in an effort to induce interactive services to steer to their catalogs at the expense of their rivals. The evidence shows that the limited and small rate changes on which Mr. Orszag relies have been driven by considerations other than price competition. Indeed, each major record company has taken active steps to *prevent* price competition by insisting on [REDACTED]

[REDACTED]

[REDACTED]

The best Mr. Orszag can muster is to claim that the playlists created by Spotify and Apple are increasingly important to promoting individual recordings and that record companies undertake extensive efforts to increase the appearance of works in their respective repertoires on those lists. Mr. Orszag misdescribes playlist creation as “steering,” but his use of that term is completely divorced from the context in which it was used in the context of *Web IV*. There, “steering” was used to describe Pandora’s ability to shift performances on its platform to low-cost suppliers and to induce music suppliers to reduce their prices in an effort to compete for those “steered” plays. 81 Fed. Reg. 26366-67. That is not the behavior that Mr. Orszag describes or that the record here supports. The Judges consistently have recognized, over many years, that agreements between major record companies and interactive streaming services reflect the exercise of complementary oligopoly power by the record companies. None of the ink spilled by Mr. Orszag or the various SoundExchange record company witnesses warrants a different conclusion here.

In his written rebuttal testimony, Professor Shapiro assesses these and numerous other conceptual errors and evidentiary failings of Mr. Orszag’s benchmark analysis, including Mr.

Orszag's failure to adhere to the *Web IV* rate-setting methodology he claims to be following, his failure to make necessary adjustments that have been applied in previous proceedings without controversy, and his refusal to consider a much more obvious benchmark for advertising-supported webcasters than the agreements between major record companies and *subscription* interactive services on which he relies, namely, the [REDACTED] rates that major labels charge advertising-supported interactive services. Professor Shapiro shows that even if one were to use the benchmark agreements Mr. Orszag recommends, the rates that would emerge after properly adjusting those benchmarks for the target market are at or below the current rates set in *Web IV* and well below the excessive rates sought by SoundExchange.

The remainder of this memorandum briefly describes the topics covered in the written rebuttal testimony submitted by each of the Sirius XM and Pandora fact and expert witnesses in response to SoundExchange's written direct statement and in opposition to SoundExchange's proposed rates and terms.

### **SUMMARY OF REBUTTAL TESTIMONY**

#### **Carl Shapiro**

Carl Shapiro, Transamerica Professor of Business Strategy Emeritus at the Haas School of Business at the University of California at Berkeley, presented testimony in the first phase of this proceeding establishing the economic basis for Pandora's and Sirius XM's rate proposal. In his rebuttal testimony, Professor Shapiro responds to SoundExchange's rate proposal and the justifications presented in support thereof—focusing on the written direct testimonies of Mr. Jonathan Orszag and Professor Catherine Tucker and the corrected written direct testimony of Professor Robert Willig.

With respect to Mr. Orszag, Professor Shapiro explains that Mr. Orszag's benchmarking approach—which utilizes royalty rates from the subscription interactive service market as

benchmarks for both subscription and advertising-supported statutory webcasters—is premised on a fundamental misconception of the nature of effective competition. As Professor Shapiro explains, Mr. Orszag’s contention that the upstream interactive subscription market is effectively competitive (a conclusion the Judges repeatedly have rejected), and therefore that no effective competition adjustment to his benchmark is required, is wrong. Professor Shapiro demonstrates that the interactive services market has *not* become effectively competitive since *SDARS III* and remains subject to the complementary oligopoly power of the three major record companies. In doing so, Professor Shapiro addresses several economic errors underpinning Mr. Orszag’s misconception of effective competition.

First, Professor Shapiro responds to Mr. Orszag’s unsubstantiated claim that Spotify and Apple have become “must-have” services for the major record companies and explains that Mr. Orszag has focused excessively and misleadingly on the short-term costs to a major record company of not licensing to Spotify, while failing to account for the minimal long-term impacts that not licensing Spotify would have for those companies. In addition, Mr. Orszag fundamentally misapplies the concept of “steering” by divorcing it from price competition, thereby conflating the ability of interactive services to influence music selection with those services’ use of price-based steering to materially lower their effective royalty rates (of which there is little to no evidence). Further, Mr. Orszag claims, but cannot show, [REDACTED]

Professor Shapiro also describes other flaws in Mr. Orszag’s benchmarking approach to rate-setting here. Chiefly, Mr. Orszag purports to apply “ratio equivalency” as that concept was employed by the Judges in *Web IV* to adjust the subscription interactive services benchmark rate for the non-interactive webcasting market, but his misapplication of that methodology for

adjusting the rates substantially inflates the results he derives. As Professor Shapiro also explains, Mr. Orszag fails to make appropriate adjustments for skips and the extra-statutory functionality of the mid-tier services he takes as his proxy for subscription noninteractive services, which would further lower the rates he derives.

Mr. Orszag's benchmark analysis for advertising-supported webcasters suffers from an additional unexplained flaw. Mr. Orszag uses royalty rates paid by *subscription* interactive services as benchmarks for *advertising-supported* webcasters, notwithstanding the Judges' rejection of this approach in *Web IV*, and he simply ignores the royalty rates paid by *advertising-supported* interactive services—the far more logical benchmark from the interactive services market for advertising-supported webcasters. As a result, Mr. Orszag proposes a rate for advertising-supported webcasters that is more than double what Professor Shapiro proposed in his written direct testimony based on the more appropriate ad-supported benchmark and the necessary adjustments to that benchmark.

With respect to Professor Willig, Professor Shapiro explains that Professor Willig's proposed rates, which are based on a Nash-in-Nash bargaining model and a Shapley Value model, are inflated by inputs to those models that Professor Willig has calculated incorrectly: (1) overstated margins for the webcaster in his models (based on Pandora's webcasting services), and (2) overstated opportunity costs to a record company of licensing to webcasters. As to the first, Professor Willig's margin estimates rely on a variety of faulty assumptions about Pandora's subscriber counts and revenue allocations, as well as incorrect assessments of whether certain costs are fixed or variable. As to the second, certain basic calculation and conceptual errors result in Professor Willig overstating the opportunity cost for the record industry of licensing to statutory webcasters.

Professor Shapiro also describes how Professor Willig’s unsubstantiated assumption that each of the three major record companies is “must-have” for statutory webcasters—which is contradicted by Pandora’s Label Suppression Experiments—infuses complementary oligopoly into his models and further inflates the rates he proposes. These errors combine to cause Professor Willig, like Mr. Orszag, to significantly overstate the appropriate statutory rates. Professor Shapiro goes on to demonstrate that, after correcting for the deficiencies in Professor Willig’s models—and utilizing either a Nash-in-Nash bargaining model or Myerson Value instead of the unsuitable Shapley Value model—the resulting rates are dramatically lower than those SoundExchange has proposed.

**David Reiley**

David Reiley is a Principal Scientist at Pandora. He is responsible for designing, executing, and analyzing studies and experiments that measure how Pandora’s services (and changes to features of those services) affect listener retention, pricing, and the broader music industry. He regularly works with his Pandora Science Team colleagues, Pandora software engineers, and business managers to create and implement analyses that could produce guidance or answers to questions relevant to Pandora’s business. Dr. Reiley also submitted written testimony during the first phase of this proceeding.

Dr. Reiley’s written rebuttal testimony rebuts Professor Willig’s unfounded assumption that the major record companies are “must-have” suppliers for noninteractive statutory services and, accordingly a noninteractive webcaster would shut down if unable to secure a license from each. Dr. Reiley discusses the results of a series of “Label Suppression Experiments” running at Pandora since June 4, 2019, to assess whether suppressing user access to music from a particular record company has a significant impact on user listening hours, the extent of any impact, and whether the impact varies by record company. Contrary to Professor Willig’s unfounded

assumption, that impact is minimal to the extent it is discernible at all. The experiments described in Dr. Reiley's written rebuttal testimony inform Professor Shapiro's rebuttal to Professor Willig's economic analysis of reasonable rates for the license at issue here.

**Jason Ryan**

Jason Ryan is Pandora's Vice President of Financial Planning and Analysis. In his written rebuttal testimony, Mr. Ryan addresses certain aspects of the written direct testimony of SoundExchange witnesses Robert Willig and Catherine Tucker and provides relevant additional information concerning Pandora's finances that undermine conclusions expressed by Professor Willig and Professor Tucker in their written direct testimony. In particular, Mr. Ryan corrects: (1) Professor Willig's incorrect attribution of certain revenues to Pandora's ad-supported music offering and incorrect allocation of revenues across the various service tiers within the Pandora music offering; (2) Professor Willig's incorrect identification and allocation of Pandora's fixed and variable costs; (3) Professor Willig's incorrect attribution of certain costs to Pandora's music service offerings and/or improper service tiers within the music offering; and (4) Professor Willig's erroneous calculation of Pandora user and subscriber projections. Mr. Ryan's testimony also demonstrates that Pandora's internal financial forecasts and recent "Long Range Scenario" (LRS) are more reliable compared to the now out-of-date financial scenarios presented in Pandora's Merger Proxy Statement upon which Professor Willig relies. Finally, Mr. Ryan address's Pandora's overall financial condition and calculates the financial impact of SoundExchange's proposed royalty rate increase. In doing so, Mr. Ryan rebuts Professor Tucker's overly optimistic view of Pandora's recent financial performance, and her significant understatement of the projected impact of SoundExchange's proposed royalty increases on Pandora's projected profitability.



**John Hauser**

Dr. John Hauser is the Kirin Professor of Marketing at the Massachusetts Institute of Technology (“MIT”) Sloan School of Management. He is an expert in survey design, demand forecasting, product confusion, product feature valuation, and measurement of consumer preferences, beliefs, and willingness to pay. In his Written Direct Testimony, Dr. Hauser conducted a consumer survey to measure what consumers would do in place of listening to Internet simulcasts of terrestrial commercial radio if such simulcasts were not available. The survey also determined consumers’ listening behavior with respect to Internet simulcasts of terrestrial commercial radio including (1) how much they listen, (2) what content they listen to, and (3) the importance of that content to consumers. The results of Dr. Hauser’s survey confirm that non-music aspects of NAB members’ simulcasts drive listening behavior, and show that simulcast listeners tend not to be people who would otherwise listen to content that would result in higher royalties for record companies.

On behalf of NAB and Sirius XM/Pandora, Dr. Hauser submits Written Rebuttal Testimony in response to the Written Direct Testimony of Professor Gal Zauberaman, who designed and administered a survey attempting to measure the music-listening behavior of listeners of music streaming services and to determine how those listeners would listen to music if those music streaming services were not available. In his rebuttal testimony, Dr. Hauser explains why Professor Zauberaman’s survey data cannot be used to reliably estimate such switching behavior, particularly with respect to simulcast listeners. Dr. Hauser also explains that flaws in the design of Professor Zauberaman’s survey likely lead to overestimates of switching to new, paid music subscriptions. Further, he shows that the design of Professor Zauberaman’s survey prevents it from reliably estimating the switching behavior of listeners of Internet simulcasts of terrestrial commercial radio and listeners of Sirius XM over the Internet in

particular. As a result of the flaws in the design of Professor Zauberman's survey, and other differences between Dr. Hauser's survey and Professor Zauberman's survey, only Dr. Hauser's survey can be used to measure the switching behavior of listeners to Internet simulcasts of terrestrial radio.

**Thomas Barry**

Thomas Barry has served as Sirius XM's Senior Vice President and Controller since 2009. In that role, he oversees transactions and accounting for the company, including the advertising sales traffic department, accounting, financial shared services, the fraud department, revenue assurance, tax accounting, internal/external reporting, and billing. Mr. Barry's written rebuttal testimony responds to SoundExchange's flawed "terms" proposals to change certain aspects of the commercial webcasting regulations in a fashion that would impose unnecessarily strict and impractical burdens and deadlines on licensees; levy unfair penalties for failure to meet those burdens and deadlines; compromise the objective and impartial role of the independent auditors in the license reporting process; and create perverse incentives for SoundExchange to increase the load of administrative and audit work in which licensees and record companies engage.

January 10, 2020

Respectfully submitted,

/s/ Benjamin E. Marks

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**Docket No. 19-CRB-0005-WR  
(2021-2025)**

**AMENDED PROPOSED RATES AND TERMS OF  
SIRIUS XM RADIO INC. AND PANDORA MEDIA, LLC**

Pursuant to 37 C.F.R. § 351.4(b)(3), Sirius XM Radio Inc. (“Sirius XM”) and Pandora Media, LLC (“Pandora”) jointly propose that the Copyright Royalty Judges set the royalty rate for Eligible Transmissions of sound recordings by nonsubscription commercial webcasters under the statutory license provided by 17 U.S.C. § 114(d) at \$0.0008 per performance for 2021, and set the royalty rate for Eligible Transmissions of sound recordings by subscription commercial webcasters at \$0.0011 per performance for 2021, with annual adjustments for 2022-2025 to reflect changes in general price levels as measured by the most recent Consumer Price Index (for all consumers and all items) (CPI-U) published by the Secretary of Labor before December 1 of the preceding year, as specified in the current regulations. The proposed fees are inclusive of the fees for the making of ephemeral recordings necessary to facilitate such Eligible Transmissions under the statutory license provided by 17 U.S.C. § 112(e).

Sirius XM and Pandora propose that the governing regulatory terms set forth in 37 C.F.R. § 380 be continued, with references to specific calendar years updated to reflect the 2021-2025 license period as appropriate, and the following changes in sections 380.4(b), 380.6(b), and 380.6(g):

**380.4(b) Unclaimed funds.** If the Collective is unable to identify or locate a Copyright Owner or Performer who is entitled to receive a royalty distribution under this part 380, the Collective must retain the required payment in a segregated trust account for a period of three years from the date of the first distribution of royalties from the relevant payment by a Licensee. No claim to distribution shall be valid after the expiration of the three-year period. After expiration of this period, the Collective ~~must handle unclaimed funds in accordance with applicable federal, state, or common law~~ shall distribute such unclaimed funds, along with a proportionate share of accrued interest, to Copyright Owners and Performers in a transparent and equitable manner based on data indicating the relative performance shares of such Copyright Owners and Performers as reflected in reports of usage provided to the Collective for the periods in question.

\* \* \*

**380.6(b) Frequency of auditing.** The verifying entity may conduct an audit of each licensee only once a year for any or all of the prior three calendar years. The auditor must complete its fieldwork and deliver its written report within 10 months of the date that the verifying entity notices the audit, and the Payor must respond to the written report in writing within one year of such notice. A verifying entity may not audit records for any calendar year more than once.

\* \* \*

**380.6(g) Audit results; underpayment or overpayment of royalties.** If the auditor determines the payor or distributor underpaid royalties, the payor or distributor shall remit the amount of any underpayment determined by the auditor to the verifying entity, together with interest at the rate for post-judgment interest specified in 28 U.S.C. § 380.2(d)1961. In the absence of mutually-agreed payment terms, which may, but need not, include installment payments, the payor or distributor shall remit promptly to the verifying entity the entire amount of the underpayment determined by the auditor. If the auditor determines the payor or distributor overpaid royalties, ~~however, the verifying entity shall not be required to remit the amount of any overpayment to the payor or distributor, and~~ the payor or distributor shall ~~not seek by any means to recoup, offset, or be entitled to~~ take a credit ~~for~~ against its next scheduled payment in the amount of the overpayment, ~~unless the payor or distributor and the verifying entity have agreed otherwise.~~

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**WITNESS INDEX: WRITTEN REBUTTAL TESTIMONY  
FOR SIRIUS XM RADIO INC. AND PANDORA MEDIA, LLC.**

<b>Expert Witnesses</b>	<b>Title</b>
Carl Shapiro, Ph.D.	Transamerica Professor of Business Strategy Emeritus at the Haas School of Business at the University of California at Berkeley; Professor of the Graduate School at UC Berkeley
John Hauser, ScD. (jointly sponsored with the National Association of Broadcasters)	Kirin Professor of Marketing at the Massachusetts Institute of Technology Sloan School of Management
<b>Company Witnesses</b>	<b>Title</b>
Jason Ryan	Vice President of Financial Planning and Analysis at Pandora Media, LLC
David Reiley	Principal Scientist for Pandora Media, LLC
Thomas Barry	Senior Vice President and Controller for Sirius XM Radio Inc.

**Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
THE LIBRARY OF CONGRESS  
Washington, D.C.**

**In the Matter of**

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(2021–2025)**

**INDEX OF REBUTTAL EXHIBITS SUBMITTED ON BEHALF OF  
SIRIUS XM INC. AND PANDORA MEDIA, LLC**

<b>Exhibit No.</b>	<b>Sponsoring Witness</b>	<b>Description</b>	<b>Bates No.</b>
SXM-PAN Reb. Ex. 001	Jason Ryan	Pandora Long Range Scenario	SXMWEBV_00006409 (RESTRICTED)
SXM-PAN Reb. Ex. 002	Jason Ryan	Merger Proxy Scenarios #1A & #2	PANWEBV_00005223 (RESTRICTED)
SXM-PAN Reb. Ex. 003	Jason Ryan	Pandora Quarterly P&L, Ad Metrics, and Subscription Matrix	SXMWEBV_00006410 (RESTRICTED)
SXM-PAN Reb. Ex. 004	Jason Ryan	Total Synergies 2019-2020	PANWEBV_00004996 (RESTRICTED)
SXM-PAN Reb. Ex. 005	Carl Shapiro	WMG Email (July 5, 2017)	SOUNDEX_W5_000097618 (RESTRICTED)
SXM-PAN Reb. Ex. 006	Carl Shapiro	WMG Research (July 5, 2017)	SOUNDEX_W5_000097619 (RESTRICTED)
SXM-PAN Reb. Ex. 007	Carl Shapiro	UMG Email (December 5, 2016)	SOUNDEX_W5_000162778 (RESTRICTED)
SXM-PAN Reb. Ex. 008	Carl Shapiro	SME Email (April 25, 2017)	SOUNDEX_W5_000149975 (RESTRICTED)
SXM-PAN Reb. Ex. 009	Carl Shapiro	SME Email (March 14, 2017)	SOUNDEX_W5_000152271 (RESTRICTED)
SXM-PAN Reb. Ex. 010	Carl Shapiro	UMG Email (December 7, 2016)	SOUNDEX_W5_000167401 (RESTRICTED)
SXM-PAN Reb. Ex. 011	Carl Shapiro	WMG Email (June 16, 2017)	SOUNDEX_W5_000096672 (RESTRICTED)
SXM-PAN Reb. Ex. 012	Carl Shapiro	WMG Deck (October, 2016)	SOUNDEX_W5_000087744 (RESTRICTED)
SXM-PAN Reb. Ex. 013	Carl Shapiro	WMG Email (October 12, 2016)	SOUNDEX_W5_000087842 (RESTRICTED)

<b>Exhibit No.</b>	<b>Sponsoring Witness</b>	<b>Description</b>	<b>Bates No.</b>
SXM-PAN Reb. Ex. 014	Carl Shapiro	UMG Email (August 27, 2016)	SOUNDEX_W5_000161782 (RESTRICTED)
SXM-PAN Reb. Ex. 015	Carl Shapiro	UMG Email (July 26, 2016)	SOUNDEX_W5_000164369 (RESTRICTED)
SXM-PAN Reb. Ex. 016	Carl Shapiro	WMG Email (August 14, 2017)	SOUNDEX_W5_000093274 (RESTRICTED)
SXM-PAN Reb. Ex. 017	Carl Shapiro	UMG Deck (August 27, 2016)	SOUNDEX_W5_000161784 (RESTRICTED)
SXM-PAN Reb. Ex. 018	Carl Shapiro	SME Email (December 7, 2016)	SOUNDEX_W5_000160408 (RESTRICTED)
SXM-PAN Reb. Ex. 019	Carl Shapiro	UMG Deck (January 19, 2016)	SOUNDEX_W5_000169141 (RESTRICTED)
SXM-PAN Reb. Ex. 020	Carl Shapiro	WMG Email (January 11, 2017)	SOUNDEX_W5_000103352 (RESTRICTED)



**Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
THE LIBRARY OF CONGRESS  
Washington, D.C.**

**In the Matter of**

**DETERMINATION OF RATES AND TERMS  
FOR DIGITAL PERFORMANCE OF SOUND  
RECORDINGS AND MAKING OF  
EPHEMERAL COPIES TO FACILITATE  
PERFORMANCES (WEB V)**

**Docket No. 19–CRB–0005–WR  
(2021–2025)**

**DECLARATION AND CERTIFICATION OF TODD D. LARSON  
(On behalf of Sirius XM Radio Inc. and Pandora Media, LLC)**

1. I am counsel for Sirius XM Radio Inc. (“Sirius XM”) and its wholly-owned subsidiary, Pandora Media, LLC (“Pandora”) (collectively, the “Companies”), in the above-captioned case. I respectfully submit this declaration and certification pursuant to the terms of the Protective Order issued June 24, 2019 (“Protective Order”). I am authorized by the Companies to submit this Declaration on their behalf.

2. I have reviewed the introductory memorandum to the written rebuttal statement, witness written rebuttal testimony, and exhibits and appendices. I have also reviewed the definitions and terms provided in the Protective Order. After consultation with my client, I have determined to the best of my knowledge, information and belief that portions of the Companies’ written rebuttal statement contain “confidential information” as defined by the Protective Order (“Protected Material”). The Protected Material is shaded in the Companies’ restricted e-filing, and described in more detail below.

3. Such Protected Material includes, but is not limited to, testimony and exhibits involving (a) contracts, contractual terms, negotiations, and contract strategy that are proprietary, not available to the public, highly competitively sensitive and, at times, subject to express confidentiality provisions with third parties; and (b) highly confidential internal business

information, financial projections, financial data, usage and performance data, and competitive strategy that are proprietary, not available to the public, and commercially sensitive. Certain additional material has also been marked as Restricted where the material was so designated by SoundExchange, Inc. or other copyright-owner participants.

4. If this contractual, strategic, negotiation, and financial information, or the usage and performance data, were to become public, it would place either or both of the Companies at a commercial and competitive disadvantage, unfairly advantage other parties to the detriment of Pandora and Sirius XM, and jeopardize their business interests. Information related to confidential contracts or relationships with third-party content providers could be used by the Companies' terrestrial radio and internet-based competitors, or by other content providers, to formulate rival bids, bid up payments, or otherwise unfairly jeopardize the Companies' commercial and competitive interests.

5. With respect to the financial and business analytic information in the Protected Material, I understand that the Companies have not disclosed to the public or the investment community the information that it seeks to restrict here (including spending and investment projections, specific royalty payment information, detailed user and subscriber counts, performance data, and the like). As a result, neither the Companies' competitors nor the investing public has been privy to that information, which the Companies have viewed as highly confidential and sensitive, and have guarded closely. In addition, when Sirius XM does disclose information about the Companies' finances to the market as required by law, it provides accompanying analysis and commentary that contextualizes disclosures by its officers. The information that the Companies seek to restrict under the Protective Order, while truthful and accurate to the best of each witness's knowledge, was not intended for public release or prepared

with that audience in mind, and therefore was not accompanied by the type of detailed explanation and context that usually accompanies such disclosures by a company officer. Moreover, the statements and exhibits containing the information have not been approved by Sirius XM's Board of Directors, as such sensitive disclosures usually are, or accompanied by the typical disclaimers that usually accompany such disclosures. Both Pandora and Sirius XM could experience negative market repercussions, competitive disadvantage, and even possible legal exposure were this confidential information released publicly without proper context or explanation.

6. The written rebuttal testimony of Carl Shapiro, Transamerica Professor of Business Strategy Emeritus at the Haas School of Business at the University of California at Berkeley, contains highly confidential, competitively sensitive information derived from documents produced and designated as Restricted by SoundExchange, including calculations based on financial and royalty payment information included in those documents. Mr. Shapiro's written rebuttal statement also includes highly confidential, competitively sensitive information provided by Pandora regarding its revenues, costs, and music programming, including information derived from the Written Rebuttal Testimony of Jason Ryan and David Reilly. This information is not publicly known or available, and its disclosure would competitively disadvantage or otherwise harm Pandora for the reasons described above.

7. The written rebuttal testimony of Jason Ryan, Vice President of Financial Planning and Analysis at Pandora Media, LLC, contains highly confidential, competitively and business-sensitive information concerning Pandora financials including both actual results and internal projections. This information is not publicly known or available, and its disclosure

could competitively disadvantage or otherwise harm Pandora with both competitors and with the record companies with whom Pandora regularly negotiates license agreements.

8. The written rebuttal testimony of David Reiley, Principal Scientist, at Pandora Media, LLC, contains highly confidential, competitively and business-sensitive information concerning proprietary blind experiments conducted among Pandora listener groups. This information is not publicly known or available, and its disclosure could competitively disadvantage or otherwise harm Pandora with both customers and with the record companies covered by the experiments with whom Pandora regularly negotiates license agreements.

9. The Companies' Introductory Memorandum to the Written Rebuttal Statement contains information that has been designated as Restricted where it appears in the witness written direct and rebuttal testimony, exhibits, and appendices.

Pursuant to 28 U.S.C. § 1746, I hereby declare under the penalty of perjury that, to the best of my knowledge, information and belief, the foregoing is true and correct.

Dated: January 10, 2020  
New York NY



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Todd D. Larson (N.Y. Bar No. 4358438)

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*Counsel for Sirius XM Radio Inc. and  
Pandora Media, LLC*

**Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
THE LIBRARY OF CONGRESS  
Washington, D.C.**

	)	
<b>In re</b>	)	
	)	
<b>DETERMINATION OF ROYALTY RATES</b>	)	<b>Docket No. 19–CRB–0005–WR</b>
<b>AND TERMS FOR EPHEMERAL</b>	)	<b>(2021–2025)</b>
<b>RECORDING AND DIGITAL</b>	)	
<b>PERFORMANCE OF SOUND RECORDINGS</b>	)	
<b>(WEB V)</b>	)	

**WRITTEN REBUTTAL TESTIMONY OF CARL SHAPIRO**

**(On behalf of Sirius XM Radio Inc. and Pandora Media, LLC)**

**10 January 2020**

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## I. Introduction and Summary

In this Written Rebuttal Testimony, I respond to the Written Direct Testimony (“WDT”) of SoundExchange witnesses Mr. Jonathan Orszag and Professor Catherine Tucker, and the Corrected Written Direct Testimony (“CWDT”) of SoundExchange witness Professor Robert Willig. Appendix A lists the materials that I relied upon in preparing this rebuttal testimony.

The concept of effective competition is integral to this proceeding. The Judges determined in *Web IV* that the willing buyer/willing seller standard applicable to this proceeding incorporates the notion of effective competition among the sellers – the record companies.<sup>1</sup> The Judges reiterated that conclusion in the *SDARS III* proceeding just two years ago, where they yet again rejected as benchmarks the same type of agreements SoundExchange proffers here because they fail to reflect the forces of effective competition.<sup>2</sup>

Effective competition among record companies in the licensing of recorded music requires that no single record company has substantial *unilateral* market power and that the record companies do not engage in coordinated interaction. In this industry, effective competition among record companies to license to a music service requires that the music service has sufficiently good substitutes for the repertoire offered by any one record company so that the cost to that music service of *not* having access to that repertoire is manageable and not fatal. Effective competition is not possible in the presence of one or more “must-have” record companies, notwithstanding the fact that a digital music service might negotiate intensely against the record companies to seek lower rates or have certain points of bargaining leverage that it can use in such negotiations to entice record companies to agree to lower rates. Monopolists routinely negotiate with their buyers and make concessions in those negotiations, but that does not signify that they lack monopoly power or that such negotiations result in outcomes that reflect the workings of an effectively competitive market.

There would be little reason even to have this ratemaking proceeding if one did not impose the requirement that the willing buyer/willing seller rate-setting standard reflect effective competition among licensor record companies in licensing benchmark music services. If monopoly rates (or, worse, complementary oligopoly rates) were viewed to be acceptable, one could just sit back and let the services and the record companies negotiate licenses on a bilateral basis. There would be no need to establish and set rates for a statutory license. At best, a statutory license for which monopolistic or oligopolistic rates were an acceptable outcome might be seen as a way of reducing transaction costs. But each individual record company could license with low transaction costs simply by posting the terms and conditions on which it is willing to license its repertoire to webcasters.<sup>3</sup> That would involve far lower transaction costs than the rate-setting process in which we are all now engaged.

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<sup>1</sup> *Web IV* Determination at 26332-3. As recounted in the *Web IV* Determination, the Judges, and before them the Librarian of Congress, have consistently held since *Web I* that the willing buyer/willing seller standard calls for a determination of what royalty rates would be in an effectively competitive market.

<sup>2</sup> See *SDARS III* Determination at 65237 (“In *Web IV*, the Judges reconfirmed that a statutory willing-buyer, willing seller royalty rate is one that would emerge in a market that is effectively competitive.”)

<sup>3</sup> This would not require “one size fits all,” because any record company could separately and bilaterally negotiate a tailored set of terms and conditions with any individual service if doing so proved to be mutually beneficial.



The hallmark of an effectively competitive market is regular, significant competition among suppliers for the patronage of buyers. In an effectively competitive market, one typically sees at least some sellers offering lower prices than their rival suppliers to gain market share. One also typically sees buyers awarding a greater share of their purchases to suppliers that offer them better terms and conditions than other suppliers. A market that is monopolized or controlled by a cartel is *not* effectively competitive. Period. If such markets were considered effectively competitive, the concept of effective competition would lose all meaning.

To be clear, effective competition does not require marginal cost pricing or a result approaching the textbook model of perfect competition. Indeed, perfect competition is not a useful model for industries such as the recorded music industry where suppliers incur substantial fixed costs and offer differentiated products. A market can be effectively competitive even if the products or services offered by different sellers are differentiated, so long as no single supplier has significant unilateral market power.

Price competition in markets for the licensing of recorded music to streaming music services occurs when a record company offers a lower royalty rate to a music service to increase its share of performances on that service relative to its rival suppliers. As explained in my CWDT, price competition in markets for the licensing of recorded music to streaming services can, in principle, take the forms of *carriage* competition, *steering* competition, or both. As I described there:

Carriage competition and steering competition are conceptually distinct. When a record company competes by offering a lower royalty rate to have its music carried by a streaming music service, that record company is competing for *all* of its performances. Effective carriage competition forces down the *average* royalty rate that a record company can obtain for all of its performances. In contrast, when a record company competes by offering a lower royalty rate to induce a streaming music service to steer more performances in its direction, that record company is competing for *incremental* performances. Effective steering competition forces down the *marginal* royalty rate that a record company can obtain for its incremental performances. In principle, carriage competition and steering competition can co-exist, or they can arise separately, depending on market conditions.<sup>4</sup>

Both carriage competition and steering competition involve the record company offering a lower royalty rate to obtain a higher share of performances on the service. In the case of carriage competition, the lower rate is offered to avoid having a share of performance equal to zero. In the case of steering competition, the lower rate is offered to increase the share of performances from one positive number to another, higher one.

In Part II, I respond to the Orszag WDT. I address numerous flaws in Mr. Orszag's benchmarking exercise and show that the rates that result from necessary corrections to his approach are far lower than the rates he proposes and significantly lower than the current rates.

In Section II.A, I refute Mr. Orszag's claim that the royalty rates he uses as benchmarks, namely the rates paid by subscription interactive services, reflect the forces of effective competition. Because Mr. Orszag's benchmark royalty rates are infected by the complementary oligopoly

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<sup>4</sup> Shapiro CWDT at 12.

power of the major record companies, they are too high and require a significant downward adjustment to reflect the forces of effective competition.

In Section II.B, I respond to the statutory royalty rates proposed by Mr. Orszag for subscription webcasters. Mr. Orszag substantially overestimates these royalty rates for several reasons above and beyond his failure to make an effective competition adjustment. First, he claims to be following the “ratio equivalency” method use by the Judges in *Web IV* but in fact departs significantly from that method in a manner that inflates his proposed royalty rates. He also fails to make suitable adjustments for skips (which are compensable under the statutory license but not under his benchmarks) and for the value of interactivity. Making these adjustments lowers the statutory rate for subscription webcasters from \$0.0033 per performance, as proposed by Mr. Orszag, to between \$0.0012 and \$0.0015 per performance. *See* Figure 5 in Section II.B.4.

In Section II.C, I respond to the statutory royalty rates proposed by Mr. Orszag for advertising-supported webcasters. Mr. Orszag again uses the royalty rates paid by *subscription* interactive services as benchmarks for advertising-supported webcasters, notwithstanding the Judges’ rejection of this approach in *Web IV*, where it was proposed by Professor Daniel Rubinfeld on behalf of SoundExchange. Mr. Orszag claims to have skirted the flaws that the Judges in *Web IV* found fatal to the use of subscription interactive services as benchmarks for this purpose, but his analysis does not come close to meeting the conditions the Judges identified as necessary for this approach to benchmarking to be acceptable. Mr. Orszag also conspicuously ignores the more obvious benchmark for advertising-supported webcasters from the interactive services market, namely the royalty rates paid by *advertising-supported* interactive services. Using those rates instead of Mr. Orszag’s roundabout approach leads to substantially lower statutory rates than Mr. Orszag’s proposed rate of \$0.0025 per performance. Simply applying a 2:1 interactivity adjustment to the rates paid by advertising-supported interactive services gives a statutory rate of \$0.0011 per performance for advertising-supported webcasters, less than half of the rate that Mr. Orszag proposes. *See* Section II.C.2.

In Part III, I respond to the Willig CWDT. Professor Willig generates proposed statutory rates using two economic models of bargaining: a Shapley Value model and a Nash-in-Nash bargaining model.

In Section III.A, I identify a number of errors that Professor Willig made in calculating the inputs for his models. In Section III.A.1, I show that he overestimates Pandora’s price/cost margins. In Section III.A.2, I show that he overestimates the opportunity cost to the record industry of licensing to statutory webcasters. Each of these errors causes him to overestimate the statutory rates implied by his models.

In Section III.B, I address Professor Willig’s unfounded assumption that each of the three major record companies is “must-have” for statutory webcasters. Professor Willig does not provide evidentiary support for this assumption, which is contradicted by Label Suppression Experiments conducted at Pandora at my direction. These experiments are reported in the Written Rebuttal Testimony (“WRT”) of Pandora Principal Data Scientist David Reiley.

By assuming that Universal, Sony, and Warner are each “must-have” for statutory webcasters, Professor Willig has hard-wired into his models the exercise of complementary oligopoly power by the three major record companies. Complementary oligopoly power is inconsistent with effective competition and leads in Professor Willig’s models to royalty rates that are even greater than the rates that would be charged by a single monopolist controlling the licensing of all

recorded music. Therefore, neither of Professor Willig's bargaining models meet the requirement that any economic model used to generate proposed statutory rates reflect the forces of effective competition. Correcting this error requires dropping Professor Willig's assumption that Universal, Sony, and Warner are each "must-have" for statutory webcasters, which results in significantly lower proposed rates.

In Section III.C, I discuss the appropriate methodology for generating statutory rates if an economic model rather than benchmarking is to be used for this purpose. In Section III.C.1, I explain why the Nash-in-Nash bargaining solution concept is superior in this setting to the Shapley Value solution concept. Both the Willig CWDT and my CWDT calculated rates based on a Nash-in-Nash bargaining model, which directly models the type of bilateral negotiations between record companies and webcasters that are called for in this proceeding under the applicable willing buyer/willing seller standard. Shapley Value does not. In Section III.C.2, I explain why Shapley Value, a theoretical method based on *cooperative* game theory, is not a suitable methodology in this setting, especially after one drops Professor Willig's unfounded and economically inappropriate assumption that each of the three Majors is "must-have" for statutory webcasters. Shapley Value is known to be flawed in a setting like this because any one record company that does not license statutory webcasters would be adversely affected when *other* record companies do. If cooperative game theory methods are to be used in this setting (rather than the superior Nash-in-Nash bargaining model), Myerson Value, a refinement of Shapley Value, is required, as it accounts for these "contracting externalities." Shapley Value does not.

In Section III.D, I report the statutory royalty rates generated using Professor Willig's models after making the corrections identified in Sections III.A, III.B and III.C. Using Professor Willig's Nash-in-Nash bargaining model, the royalty rate for advertising-supported webcasters falls from his derived rate of \$0.00298 to \$0.00088 per performance, and royalty rate for subscription webcasters falls from \$0.00301 to \$0.00100 per performance. *See* Section III.D.1. Correcting Professor Willig's Shapley Value model to calculate the Myerson Value causes the royalty rate he derives for advertising-supported webcasters to fall from \$0.00297 to \$0.00114 per performance, and the royalty rate for subscription webcasters to fall from \$0.00312 to \$0.00134 per performance. *See* Section III.D.2.

## **II. The Flaws in Mr. Orszag's Analysis Cause Him to Significantly Overstate the Rates That Would Result from Negotiations Between a Willing Buyer and a Willing Seller in an Effectively Competitive Market**

### ***A. Mr. Orszag's Contention That Licenses Between Major Record Companies and Leading Interactive Services Now Reflect Effective Competition Does Not Withstand Scrutiny***

The Orszag WDT employs a benchmarking approach to setting statutory royalty rates for webcasters. Mr. Orszag uses royalty rates from the interactive subscription services market as benchmarks for statutory subscription webcasters and for statutory advertising-supported webcasters. Misapprehending the nature of effective competition, Mr. Orszag claims that the upstream interactive subscription market is effectively competitive, and therefore that no

adjustment is needed to satisfy the willing buyer/willing seller standard<sup>5</sup> That claim is facially problematic, because the Judges found, in their *SDARS III* Determination, that the rates from the interactive market were elevated above effectively competitive rates as of 2017.<sup>6</sup> That finding confirmed the Judges' previous finding, in their *Web IV* Determination, that the interactive services market was *not* effectively competitive.<sup>7</sup> Because both findings imply that an effective competition adjustment is needed if royalty rates set in that market are to be used as benchmarks for statutory webcasting, Mr. Orszag's approach requires him to claim that the interactive services market has become effectively competitive since *SDARS III*.

In this section, I systematically apply economic principles to the available evidence to refute that claim. I demonstrate that the interactive services market was *not* effectively competitive as of the time that the agreements used by Mr. Orszag as benchmarks were reached.<sup>8</sup> Rather, it remained subject to the complementary oligopoly power of the three major record companies. Therefore, royalty rates from that market can only be used as benchmarks if a suitable adjustment is made to reflect the lower rates that would result from effective competition among record companies. The Judges made such an adjustment in their *Web IV* Determination. My CWDT in this proceeding also made such an adjustment. Sections II.B and II.C quantify the needed effective-competition adjustments that Mr. Orszag did not make.

### 1. What Would Evidence of Effective Competition Look Like?

As a general principle, to conclude that the prices set in a market reflect the forces of effective competition, one needs to observe suppliers, on a regular and widespread basis, offering customers lower prices than their rivals to gain market share, or to avoid losing market share.<sup>9</sup>

What would that type of evidence look like in the upstream interactive services market?

In the upstream interactive services market, evidence of price competition would take the form of *record companies regularly offering lower royalty rates to interactive services to increase their share of performances on these services*. This could take the form of carriage competition: record companies regularly offering lower royalty rates to be carried rather than dropped by

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<sup>5</sup> Orszag WDT, Section V, p. 44-75.

<sup>6</sup> *SDARS III* Determination at 65231 ("the Judges find there is no *bona fide* dispute but that these rates would partially reflect the complementary oligopoly effect of Majors.")

<sup>7</sup> *Web IV* Determination at 26344.

<sup>8</sup> Logically, given the findings in the *SDARS III* Determination, and the absence of any assertion by Mr. Orszag that those findings were mistaken, Mr. Orszag must be claiming that the royalty rates charged to interactive subscription services in the agreements he used as benchmarks in *SDARS III* did not reflect the forces of effective competition, but the royalty rates in the agreements that he is now using as benchmarks do. Therefore, he must be claiming that the upstream interactive services market became effectively competitive during the 2017 and 2019 time period.

<sup>9</sup> While competition on non-price dimensions can be expected to benefit the buyers, namely the interactive services in this case, the presence of *non-price* competition does not imply that the *royalty rates* are at competitive levels. Quite to the contrary: if prices are maintained at supra-competitive levels, whatever competitive forces are present will be directed instead along non-price dimensions. This is a well-known issue in cases involving cartels. If a group of rivals forms a cartel to fix prices at supra-competitive levels, cartel members may be tempted to compete even harder on non-price dimensions so as to gain more high-margin sales. This point is not merely theoretical. For example, some cartels, anticipating that cartel members will be tempted to compete on non-price dimensions if the cartel just fixes prices, instead employ customer or territorial allocation, which prevent competition on all dimensions.

interactive services. This also could take the form of steering competition: record companies regularly offering lower royalty rates than their rivals to induce steering toward their music or avoid steering away from their music.

Given the findings in the *Web IV* and *SDARS III* proceedings that royalty rates in the upstream interactive services market reflected the complementary oligopoly power of the Majors, and thus were above competitive levels, any empirical claim that the royalty rates set more recently in this market are effectively competitive would also require a demonstration that the royalty rates being used as benchmarks in this proceeding are significantly lower than the royalty rates used as benchmarks in *SDARS III* as a result of competition among record companies.

## 2. The Lack of Evidence of Effective Competition

With these principles in mind, I now assess the evidence put forward by Mr. Orszag to support his claim that the royalty rates in the interactive services market that he is using as benchmarks reflect the forces of effective competition.

Mr. Orszag states:

In the *Web IV* proceeding, the Judges accepted the interactive services market as a benchmark for subscription noninteractive services, but only after (among other things) adjusting for the perceived market power of the Majors in the interactive market *at that time*. I believe that, based on changes in the market in recent years, no such adjustment to the rates I propose above is required here.<sup>10</sup>

Mr. Orszag supports this claim by pointing to three asserted changes in the interactive services market:<sup>11</sup>

1. “What has changed, however, is that the interactive services – Spotify and Apple in particular – have grown so large and become so important to the record companies that the interactive services are now at least equally ‘must-haves’ for the Majors.”
2. “The interactive services’ ability to ‘steer’ has grown substantially since the *Web IV* proceeding.”
3. “Unlike *Web IV*, there is evidence of price competition in this case.”

I address these three points in turn. For each point, I explain why the evidence put forward by Mr. Orszag does not support his claim that “these changes in the interactive market since the time of the *Web IV* case render unnecessary any adjustment for effective competition.”<sup>12</sup> Even less does the evidence support Mr. Orszag’s implicit claim that the interactive market has become effectively competitive since the time of *SDARS III*.

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<sup>10</sup> Orszag WDT, ¶100 (emphasis in original).

<sup>11</sup> Orszag WDT, ¶107.

<sup>12</sup> Orszag WDT, ¶108.

*a. The Growth of Spotify and Apple Music*

Mr. Orszag and I agree that the major record companies are “must-have” for interactive services, meaning that those services would shut down without any one major record company’s catalog.<sup>13</sup>

Mr. Orszag states the essence of his “countervailing power” argument this way: “The fact that the Services (or at least Spotify and Apple) are now at least equally ‘must-haves’ for the Majors will result in negotiations that should produce rates that are akin to rates negotiated in an effectively competitive market.”<sup>14</sup> Mr. Orszag argues that the status of Spotify and Apple as “must-have” services “[n]egates any hold-out power that the record companies may possess” such that no effective-competition adjustment is required when using rates from the interactive market as benchmarks.<sup>15</sup>

I strongly disagree with Mr. Orszag’s rather startling claim that Spotify and Apple are “must-have” services for the major record companies. There is no evidence, nor any reason to believe, that any major record company would shut down if it were unable to reach agreement on license terms with either Spotify or Apple.

To illustrate this central point, consider as an example the negotiations between Spotify and Sony. Sony is “must-have” for Spotify (as Mr. Orszag concedes), so if Spotify fails to sign a license with Sony, Spotify’s interactive service will decline, fail to be commercially viable, and be forced to close down. Unquestionably, that makes an impasse very costly for Spotify, so Sony has a great deal of bargaining power in its negotiations with Spotify.<sup>16</sup>

Mr. Orszag claims that Spotify has comparable bargaining power as a “must-have” service for Sony, but that claim does not withstand scrutiny. If Sony does not sign a license with Spotify, so Spotify is forced to stop offering Sony tracks, Sony will immediately suffer a loss of royalty income from Spotify. To measure this immediate loss, we can ask what share of Sony’s royalty income from recorded music in the United States was accounted for by Spotify in 2017, when Spotify’s most recent agreements with the Majors were signed. According to Table 13 in the Orszag WDT, Sony received █████ of its total revenue from Spotify in 2017.<sup>17</sup>

Mr. Orszag provides no explanation of why Sony losing up to █████ of its revenue from recorded music is comparable, in terms of impact and thus bargaining power, to Spotify having to shut down its service altogether. Moreover, the █████ figure for Spotify’s share of Sony’s revenue in 2017 is *far* too high as a measure of the revenue that Sony would have lost, had Sony music no longer been available on Spotify. Crucially, the █████ figure represents the *immediate*

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<sup>13</sup> Orszag WDT, ¶107 (“It likely remains the case that the Majors are ‘must-haves’ for the interactive services, at least in the long run although not necessarily in the short run.”). Mr. Orszag defines the long-run as “the period in which consumers switch to another service to gain access to the removed repertoire.” Orszag WDT, ¶116. Under his circular definition, no label could possibly be “must-have” in the short-run. He states that “the short-run period of time before any material defection of subscribers occurs may well be several months or more.” Orszag WDT, ¶116.

<sup>14</sup> Orszag WDT, ¶109.

<sup>15</sup> Orszag WDT, ¶113.

<sup>16</sup> As explained below, the economics of bargaining teaches that bargaining power depends on the long-run impact on both parties of failing to reach an agreement, with future impacts suitably discounted as are all cash flows.

<sup>17</sup> The Universal and Warner figures are comparable: █████ respectively. My analysis here would not be materially changed if one used the 2018 figures shown in Table 13 of the Orszag WDT. The Sony figure is █████



impact on Sony, before any Spotify subscribers respond to the absence of Sony music. Quite soon, Sony's loss of income would be much smaller. As emphasized repeatedly by SoundExchange—indeed as a foundational pillar of its entire case here—a “must-have” record company bears a substantial opportunity cost of licensing to a music service because without its music listeners to that service will shift their listening time to other forms of music listening. By *definition*, that implies that when Sony does *not* license to Spotify, Sony will gain substantial revenue from other licensees and other forms of listening. As a matter of arithmetic, that means that Sony would lose less than [REDACTED] of its revenue.

As an illustrative example, suppose that Spotify would shut down after one year, due to its lack of Sony's “must-have” repertoire, and suppose that all of the former Spotify subscribers would replace their Spotify subscriptions with subscriptions to other interactive services that pay royalties comparable to those paid by Spotify. In that case, Sony would be made entirely whole after the first year. In that situation, Spotify would have very little bargaining power in its negotiations with Sony, far less than Sony's power as a “must-have” record company.<sup>18</sup>

Mr. Orszag and the label witnesses on which he relies emphasize the *short-term* cost to a record company of not licensing to Spotify.<sup>19</sup> However, economic theory tells us that the correct measure of the cost to Sony of not licensing to Spotify in a bargaining context is the *present discounted value* of the revenue that Sony would lose in total.<sup>20</sup> The present discounted value includes short-term *and* long-term effects, weighting them appropriately given the time value of money.<sup>21</sup>

This is a critical point in understanding relative bargaining power in the upstream interactive services market. The underlying idea is relatively simple and hopefully intuitive: when two parties are bargaining, their bargaining power does not just depend upon how costly an impasse would be for each of them over the first day or week, but rather upon how costly an impasse would be over time. Mr. Orszag's analysis is unreliable because he focuses excessively on the short-term cost to a major record company of not licensing to Spotify and fails to account for the long-term effects.

To illustrate further why Mr. Orszag's analysis is so incomplete and misleading, suppose that without Sony music, Spotify's interactive service would lose one-third of its subscribers during the first year, after which it would cease to operate. Suppose that 80% of former Spotify subscribers would sign up for new subscriptions to other interactive services, including Apple Music, that pay royalty rates to Sony comparable to those paid by Spotify, and 20% would switch to forms of listening that generate no incremental royalty income for Sony. With these

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<sup>18</sup> With a 10% annual interest rate, the present discounted value of a harm that lasts one year is about one-tenth as large as an indefinite harm. So, the cost to Sony of not being carried on Spotify would be comparable to losing [REDACTED] % of its revenue indefinitely. In contrast, Spotify would be forced to shut down after one year, which would be comparable to losing at least 90% of the present discounted value of its revenues and of its profits.

<sup>19</sup> [REDACTED]. See SoundExchange Exhibit 81 at slide 3.

<sup>20</sup> This proposition is formally proven as a matter of economic theory in Melvyn G. Coles and Abhinay Muthoo (2003), “Bargaining in a Non-Stationary Environment,” *Journal of Economic Theory* 109(1), 70-89. This same principle applies to Spotify or, indeed, to any negotiating party.

<sup>21</sup> Appendix B proves that the outcome of Nash Bargaining, as an example, is determined by the present discounted value of the cost to each party of a bargaining impasse.



assumptions, if Sony did not license Spotify, Sony would lose about [REDACTED] of its royalty income during the first year (the two-thirds of Spotify subscribers who would stick with Spotify during that year). Sony would also lose another [REDACTED] of its royalty income [REDACTED] during the first year (subscribers who would leave Spotify and not sign up for a new subscription interactive service). After that, Sony would lose only [REDACTED] of its royalty income [REDACTED], corresponding to the former Spotify subscribers who shift to forms of listening that generate no royalty income for Spotify as opposed to using other interactive services. Applying an 8% discount factor, not licensing to Spotify would, in total, cause Sony to lose [REDACTED] of the present discounted value of its royalty income.<sup>22</sup> In this same scenario, Spotify would lose one-third of its subscribers during the first year, after which it would shut down. This implies that Spotify would be facing a loss of roughly 95% of the present discounted value of its revenue and profits if it does not license the Sony repertoire.

Clearly, in this situation Sony would be in the driver's seat in negotiating with Spotify. Similar numbers would apply to Apple Music, whose share of royalty income for the major record companies is slightly greater than Spotify's share, according to Table 13 in the Orszag WDT.

In the face of this logic, what evidence does Mr. Orszag offer to support his claim that Spotify and Apple Music are "must-have" services for the major record companies?

Citing record company executives, Mr. Orszag states: "Because Spotify and Apple Music generate such a significant portion of the record companies' revenues, a record company [REDACTED]

[REDACTED]"<sup>23</sup> These statements are simply not responsive to the analysis given above, which shows a wide disparity in the impact of a blackout on Spotify (total shutdown of its service before long) as compared to Sony (roughly a [REDACTED] decline in present discounted value of its future stream of revenues).

Mr. Orszag also states: "[REDACTED]

[REDACTED]"<sup>24</sup> This comment also is not responsive to the analysis just given, especially since these comments do not appear to account for Spotify or Apple Music shrinking and then shutting down due to lack of access to a major record company's repertoire, with listeners shifting to other forms of listening including other interactive subscription services.

Mr. Orszag also points out that interactive services *collectively* account for a growing share of record industry revenue.<sup>25</sup> That is true, but it is beside the point, as they do not negotiate

<sup>22</sup> As reported in my CWDT, the Sony Weighted Average Cost of Capital is about [REDACTED] Shapiro CWDT at n. 40. Defining  $L_1$  as the loss percentage in the first year,  $L$  as the loss percentage in subsequent years, and  $r$  as the annual interest rate, the formula for the present value of loss as a percentage of revenues is  $(rL_1 + L)/(1 + r)$ .

<sup>23</sup> Orszag WDT, ¶128, footnotes omitted. See also Orszag WDT, ¶135.

<sup>24</sup> Orszag WDT, ¶113.

<sup>25</sup> Orszag WDT, ¶120-122. One reason the interactive services collectively make up such a significant share of record company revenue is because the royalty rates paid by these services are so high. Mr. Orszag is effectively



collectively. The correct analysis of the bargaining power of Spotify or Apple Music involves looking at each of them *individually*, as was done above. I also note that one reason *why* the interactive services collectively make up such a significant share of record company revenue is because the royalty rates paid by these services are so high. Mr. Orszag is effectively arguing that the interactive services have bargaining power based on a measure that is inflated by their *weak* bargaining position due to the complementary oligopoly power of the record companies.

While Mr. Orszag provides various measures showing how Spotify and Apple Music have grown in recent years,<sup>26</sup> none of that adequately addresses the analysis given above, which properly focuses on their individual shares of royalty income for the major record companies.

Mr. Orszag also measures concentration in the downstream interactive services market, using the Herfindahl-Hirschman Index (HHI). He compares that downstream HHI with the HHI measured among the record companies in the upstream interactive services market.<sup>27</sup> Mr. Orszag evidently believes that this comparison is meaningful and supports his arguments. It does not.

First, regarding Spotify and Apple Music, the downstream HHI calculated among interactive services in the United States is irrelevant for the question at hand, i.e., how costly it would be to a major record company not to sign a license with one of these services. The calculation above directly answered that question. Even a single service controlling an entire downstream market (giving a downstream HHI of 10,000) would lack monopsony power in the upstream market if that service accounted for a small share of record company revenue. The Judges applied just this reasoning in their *Web IV* Determination in concluding that Pandora lacked undue market power as a buyer. The Judges quoted the Shapiro WDT, which stated: “Pandora’s share of listening among noninteractive webcasters is *not* the key variable for determining whether or not Pandora has monopsony power over Merlin. Rather, the correct variable upon which to focus is the share of the Merlin Labels’ revenues that comes from Pandora. If a very large share of the Merlin Labels’ revenues came from any single music user, then that music user could well have monopsony power over Merlin. But this is demonstrably not the case for Pandora.” The Judges then wrote, “The Judges find this explanation sufficient to contradict the assertion that Pandora exercised undue market power in negotiating the terms of the Pandora/ Merlin Agreement.”<sup>28</sup>

Second, Mr. Orszag computes an HHI for record companies even though we agree that the three major record companies are “must-have” for interactive services. Textbook economics teaches that “must-have” inputs are *complements*, not substitutes. The HHI is not remotely meaningful or informative as a metric of competition if one is measuring revenue from complements.<sup>29</sup> Any informed analysis of effective competition requires an understanding of the fundamental economic distinction between substitutes and complements.

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arguing that the interactive services have bargaining power based on a measure that is inflated by the complementary oligopoly power of the record companies.

<sup>26</sup> Orszag WDT, ¶123-124.

<sup>27</sup> Orszag WDT, ¶125 and Table 12.

<sup>28</sup> *Web IV* Determination at 26371.

<sup>29</sup> In fact, the more separate “must-have” input suppliers, the worse is the complementary oligopoly problem, so a lower measured HHI among complements tends to correspond to an even more dysfunctional market.

Mr. Orszag argues that a Major would suffer [REDACTED] if it were not distributed through Spotify or through Apple Music, [REDACTED]

[REDACTED] Again, his analysis is incomplete and misleading. First, the evidence on this point appears to be largely speculative and is not quantified in any meaningful way. Second, Mr. Orszag's analysis here does not account for the critical fact that the service in question would *shut down* without the repertoire of the Major in question, with users finding other places to listen to that record company's music.<sup>31</sup> By definition, because each of the Majors is "must-have" for an interactive service, in the long run, we would not see a situation where, say, Universal would not be on Spotify but Sony and Warner would be, thus putting Universal at a disadvantage in the artist community. This is a major omission that invalidates Mr. Orszag's analysis of such long-run reputation effects, and indeed his entire analysis relating to the impact of an impasse on a major record company.

Mr. Orszag also raises the issue of loss of international revenue from Spotify.<sup>32</sup> However, Mr. Orszag does not explain why Spotify's bargaining power in a negotiation over a worldwide license would be substantially greater than their bargaining power in a negotiation over a U.S. license. Both sides have more at stake in negotiations over a worldwide license, but that fact alone is not informative regarding relative bargaining power. In addition, to the extent that Spotify has additional bargaining power outside the United States, that would most naturally lead to lower royalty rates *outside* the United States, but not in the United States, especially if the U.S. rates will be put forward as benchmarks in a rate-setting proceeding. Furthermore, Mr. Orszag's claim that the U.S. rates paid by Spotify are determined in significant part by conditions *outside* the United States (because they are negotiated as one part of worldwide licenses that Spotify signs with record companies) is inconsistent with his whole benchmarking approach, which uses U.S. royalty rates as benchmarks. His claim also overlooks that Spotify's agreements with the majors identify specific (and often different) rates for various countries.

Mr. Orszag also claims that a major record company not licensing to an interactive service would lose valuable data on listening, and this would be very costly to that record company.<sup>33</sup> However, all of the evidence he cites here relates to the overall value of data on listening patterns, not the value of data coming from any one service. Mr. Orszag does not address the *incremental* value to a record company of the data from just one service, the relevant question in this context. Nor does he quantify the value of the data that a record company gets from interactive services, much less the incremental value of the data coming from just one of those services. Mr. Orszag does not even identify any unique type of data supplied by Spotify or by any single interactive service.

Mr. Orszag concludes this portion of his WDT by speculating that "In contrast, major streaming services are less likely to suffer from a short-term disruption of their relationship with a record company, because for a variety of reasons it could take months for a significant number of

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<sup>30</sup> Orszag WDT, ¶130, citing Piibe WDT and Sherwood WDT.

<sup>31</sup> Orszag WDT, ¶130. Mr. Orszag cites the Piibe WDT at ¶29-30, but this passage talks about how [REDACTED]. Obviously, this would no longer be a factor after Spotify shut down due to lack of Sony music. Mr. Orszag's citation to the Sherwood WDT at ¶30-36 suffers from the same basic flaw.

<sup>32</sup> Orszag WDT, ¶131.

<sup>33</sup> Orszag WDT, ¶132-134.

consumers to switch to another service.”<sup>34</sup> Even if this speculation were true, it would not give Spotify or Apple Music the type of “must-have” bargaining power the Mr. Orszag attributes to them. As explained above, overall bargaining power is based on the present discounted value of the impact of a bargaining impasse, not on the impact over the first several months.

In summary, Mr. Orszag’s claim that Spotify and Apple are “must-have” services for the major record companies simply does not withstand scrutiny.

***b. The Increased Ability of Interactive Services to Influence Music Selection***

Mr. Orszag contends that interactive services have more influence on music selection than in the past, primarily due to the growing role of playlists provided by these services.<sup>35</sup> The key issue addressed here is what *relevance* the evidence he cites has for the benchmarking exercise.

In framing his argument, Mr. Orszag acknowledges the Judges’ finding in *Web IV* that “[t]he ability of noninteractive services to steer toward lower priced recordings (and, by necessity therefore, away from higher priced recordings) is the essence of price competition.”<sup>36</sup>

But Mr. Orszag then misuses the word “steering” to divorce it from the concept of price competition. For the purpose of this discussion, it is important to define the term “steering” precisely and to use it in the same way that the Judges used it in *Web IV*, which I believe reflected my usage as well. In my CWDT in this proceeding, I quoted the following passage from my *Web IV* WDT:

If a music service plays more of a particular record company’s music because that music is less expensive than the music from other record companies, I will say that the music service ‘steers’ listening toward the less expensive record company. Likewise, a music service can steer away from a record company whose music is more expensive than the music of other record companies.<sup>37</sup>

I will continue to use the term “steering” to refer to a service playing more of a particular record company’s music *because that music is less expensive than the music of other record companies*.

For current purposes – benchmarking based on royalty rates – it is absolutely critical to distinguish steering, which by definition is based on royalty rates, from other ways in which interactive services influence music selection. I urge the Judges to reserve the word “steering” for price-based music choice by services, so this distinction can be addressed without confusion.

If we see evidence that interactive services are actually engaging in steering, and that they have obtained lower royalty rates on account of such steering (or the threat to do so), then that would indicate that steering competition has put some downward pricing pressure on royalty rates. If that evidence demonstrated that this pressure is sufficiently strong, the resulting royalty rates could indeed reflect the forces of effective competition. The impact of actual or threatened steering on royalty rates is a factual question which must be resolved based on the evidence.

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<sup>34</sup> Orszag WDT, ¶136.

<sup>35</sup> Orszag WDT, ¶138-150.

<sup>36</sup> *Web IV* Determination at 26367, cited in Orszag WDT, ¶140.

<sup>37</sup> Shapiro CWDT, p.9, citing Shapiro *Web IV* WDT, p. 10.



By contrast, the ability of interactive services to generally influence music selection has little or no relevance for the benchmarking exercise if that ability was not used to obtain lower royalty rates. This is where the evidence presented by Mr. Orszag falls short. He presents evidence that the ability of the interactive services to influence music selection has grown over time, but he does not present evidence that this growing ability to influence music selection has caused the major record companies to compete against each other by offering lower royalty rates. Indeed,

The following fact pattern illustrates why price-based steering has very different implications for a benchmarking exercise from other ways in which interactive services can influence music selection as regards the benchmarking exercise. Suppose that (1) each of the three major record companies is “must-have” for Spotify (as Mr. Orszag does); (2) the three Majors have obtained royalty rates that reflect their complementary oligopoly power, rates well above competitive levels (as the Judges found in *Web IV* and *SDARS III*); (3) these “must-have” record companies also have used their complementary oligopoly power to put [REDACTED] in their agreements with Spotify; and (4) Spotify has considerable ability to influence the performance shares of the record companies through its construction of playlists and through its choice of what music to feature on prominent areas of the platform. What incentives would this fact pattern create for Spotify and for the major record companies?

In this situation, each major record company would have a clear incentive to encourage Spotify to play more of its music to increase its *pro rata* share of the royalty pool. While that is always true to some degree, it is especially true if royalty rates are at supra-competitive levels. That encouragement would naturally take the form of record companies promoting their music to the people at Spotify who construct playlists and thus influence music selection on Spotify.

The evidence put forward by Mr. Orszag fits this pattern quite closely and clearly is not sufficient to establish that the royalty rates set in the interactive services market are at competitive levels. While Mr. Orszag provides evidence that interactive services can influence music selection, he does *not* provide evidence that the ability of services to influence music selection has caused the major record companies to compete against each another on the basis of price.<sup>38</sup> Indeed, they have not done so.

A close reading of the relevant portion of the Orszag WDT (¶¶141-150) reveals his lack of evidence of price-based steering by interactive services. In paragraphs 142-143, Mr. Orszag shows that Spotify’s own playlists are responsible for more listening than in the past and third-party playlists less; in paragraph 144, he shows that being on Spotify’s top playlists is very valuable for artists; and in paragraph 145, he shows that Spotify’s playlists have a significant influence on listening on Spotify. None of that, however, demonstrates that Spotify has used steering to obtain lower rates from the major labels. Paragraph 146 of Mr. Orszag’s WDT confirms this absence from the perspective of the major record companies.

Indeed, when Mr. Orszag discusses how the major record companies have responded to the growing role of service-generated playlists, he does *not* claim that they have reduced their royalty rates to encourage increased plays of their material. Instead, he states:

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<sup>38</sup> Below, I refute Mr. Orszag’s claim that there has been price competition among record companies in the upstream interactive services market.

“As a result, the record companies [REDACTED]

[REDACTED] Such a growing importance of service-controlled playlists is also evident in the [REDACTED] in order to increase their catalogue exposure through the services’ playlists.”<sup>39</sup>

This behavior is exactly as one would predict in a market in which the sellers have complementary oligopoly power: given the supra-competitive royalty rates charged by the Majors, they have strong incentives to encourage interactive services to play more of their music.

Examining the documents from the major record companies produced by SoundExchange in this proceeding confirms that, contrary to what Mr. Orszag asserts, [REDACTED]

[REDACTED] etition. For example, internal [REDACTED] emails [REDACTED]

[REDACTED] 40 [REDACTED]

Similarly, [REDACTED] documents indicate that, [REDACTED]

[REDACTED] <sup>2</sup> To the contrary, [REDACTED]

[REDACTED] In addition, [REDACTED]

<sup>39</sup> Orszag WDT ¶146 (footnotes omitted).

<sup>40</sup> SOUNDEX W5 000097618 (SXM-PAN Reb. Ex. 005). See also SOUNDEX W5 000097619 (SXM-PAN Reb. Ex. 006) (“[REDACTED]” (emphasis in original))

<sup>41</sup> As discussed below, [REDACTED]

<sup>42</sup> [REDACTED]

[REDACTED] Harrison Dep. at 64:24-65:3.



[REDACTED]<sup>43</sup> This interpretation (an [REDACTED]) is consistent with the fact that [REDACTED] to ensure it would not end up getting a lower royalty rate than the other record companies.<sup>44</sup>

Mr. Orszag also discusses ways other than playlists that Spotify and Apple Music can influence music selection. He states, for example, that “Spotify’s and Apple Music’s off-platform promotional activities, such as live concerts, can raise a new artist’s profile substantially through the service’s user base.”<sup>45</sup> However, he does not provide evidence that Spotify or Apple Music based these promotional activities on the royalty rate charged by the artist’s record company.

Mr. Orszag further states that “Spotify and Apple Music are able to steer listeners away from a record company’s content by producing content on their own and promoting other lower royalty-bearing (or even no royalty bearing) content on the platform.”<sup>46</sup> He cites to “ambient music playlists” as an example of this type of content. However, the [REDACTED]

[REDACTED]<sup>47</sup> Mr. Orszag also cites podcasts as examples. However, [REDACTED]

Mr. Orszag states that [REDACTED]

<sup>43</sup> SOUNDEX\_W5\_000162778 (SXM-PAN Reb. Ex. 007) (emphasis added).

<sup>44</sup> [REDACTED]

[REDACTED] Harrison Dep. at 59:13-22.

<sup>45</sup> Orszag WDT at ¶147.

<sup>46</sup> Orszag WDT at ¶148.

<sup>47</sup> SOUNDEX\_W5\_000097618 (SXM-PAN Reb. Ex. 005). See also SOUNDEX\_W5\_000097619 (SXM-PAN Reb. Ex. 006). Similarly, [REDACTED]

SOUNDEX\_W5\_000149975 (SXM-PAN Reb. Ex. 008) at 978.

<sup>48</sup> Internal emails [REDACTED]

See SOUNDEX\_W5\_000152271 (SXM-PAN Reb. Ex. 009) at 273; SOUNDEX\_W5\_000167401 (SXM-PAN Reb. Ex. 010); SOUNDEX\_W5\_000096672 (SXM-PAN Reb. Ex. 011). [REDACTED]

(SOUNDEX\_W5\_000016125 at 134); [REDACTED]

(SOUNDEX\_W5\_000011145 at 165); [REDACTED] April 1, 2017) (SOUNDEX\_W5\_000004474 at 495).

He cites the Adadevoh WDT ¶12 and the Piibe WDT ¶¶24-28 to support this claim. However, their statements are difficult to reconcile with the presence of clauses in the agreements between [REDACTED] and the Majors. Plus, as noted above, the major record companies had other reasons to offer Spotify a lower royalty rate.

From the perspective of economics, it is difficult to see how there could be meaningful price competition among the major record companies [REDACTED]. If one major record company offers a lower royalty rate [REDACTED], that record company is not actually offering to accept a lower rate than the other major record companies are charging. Rather, it is offering a lower rate *only if* the other major record companies also offer that lower rate.<sup>50</sup>

Such *conditional* price reductions simply do not constitute price competition. Such conduct is more akin to a monopolist lowering its price to allow its distributor to remain viable so it can sell more of its product. Indeed, as shown below, [REDACTED]

[REDACTED] not to incentivize an increased share of the performances on [REDACTED]

Mr. Orszag does not address this fundamental point about [REDACTED]

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<sup>49</sup> Orszag WDT at ¶149.

<sup>50</sup> See, for example, the [REDACTED]

[REDACTED] (SOUNDEX W5 000011145 at 180). Likewise, [REDACTED]

[REDACTED] (SOUNDEX W5 000016125 at 146). [REDACTED]

[REDACTED] SOUNDEX\_W5\_000004474 at 524).



*c. Purported Evidence of [REDACTED] for Interactive Services*

Mr. Orszag states that [REDACTED]

[REDACTED]<sup>51</sup> Inasmuch as Mr. Orszag does not dispute the Judges' findings in the *SDARS III* Determination, he should be looking at how royalty rates have changed since 2017, not since 2015.

The relevant rates are the effective rates, since those are the rates actually paid by the services and since those are the rates being used here as benchmarks. These rates are displayed in Table 15 of the Orszag WDT. However, the contracts from which these rates are taken involve a wide range of provisions in addition to the terms that determine the effective rate used by Mr. Orszag. This is important, because Mr. Orszag has not tracked how those other terms have changed over time. For example, internal [REDACTED] documents show that [REDACTED]

Moreover, far from exhibiting an exercise of countervailing power by [REDACTED] the documents indicate that [REDACTED]

These [REDACTED] documents do not support Mr. Orszag's suggestion that [REDACTED]

[REDACTED] In particular, these documents indicate that [REDACTED]

Contemporaneous documents from [REDACTED]. As described in one internal email, [REDACTED]

<sup>51</sup> Orszag WDT at ¶151.

<sup>52</sup> SOUNDEX\_W5\_000087744 (SXM-PAN Reb. Ex. 012) at 745.

<sup>53</sup> *Id.*; see also SOUNDEX\_W5\_000087842-843 (SXM-PAN Reb. Ex. 013) [REDACTED]

<sup>54</sup> Reports after the Spotify IPO indicate that Sony had a 5.7% share of Spotify stock, and sold half its stake for an estimated \$750 million after the IPO. Warner had about 2% of Spotify shares which it sold for \$500 million. Estimates by Music Business Worldwide indicate that Universal had about a 3.5% share at the time of the IPO, while Merlin had roughly a 0.5% share, which it sold for at least \$100 million. Tim Ingham, "Here's exactly how many shares the major labels and Merlin bought in Spotify – and what those stakes are worth now," *The MBW Review* (May 14, 2018), available at <https://www.musicbusinessworldwide.com/heres-exactly-how-many-shares-the-major-labels-and-merlin-bought-in-spotify-and-what-we-think-those-stakes-are-worth-now/>; Jem Aswad, "Warner Music Group sells its entire stake in Spotify," *Variety* (August 7, 2018), available at <https://variety.com/2018/biz/news/warner-music-group-sells-entire-stake-in-spotify-1202897605/>.



internal documents indicate that

<sup>56</sup> Similarly, the

Another [REDACTED] presentation about the [REDACTED] negotiations shows that

next slide in the presentation clarifies the source

<sup>55</sup> SOUNDEX W5 000161782 (SXM-PAN Reb. Ex. 014). *See also* Harrison Dep. at 26:3-8

<sup>56</sup> SOUNDEX\_W5\_000164369 (SXM-PAN Reb. Ex. 015) [REDACTED]; Harrison Dep. at 33:23-34:4 [REDACTED]

<sup>57</sup> SOUNDEX W5 000093274 (SXM-PAN Reb. Ex. 016). See also SOUNDEX W5 000087842 (SXM-PAN Reb. Ex. 013) [REDACTED]

<sup>58</sup> SOUNDEX W5 000161784 (SXM-PAN Reb. Ex. 017) at 786.

SOUNDEX W5 000160408 (SXM-PAN Reb. Ex. 018).

Indeed, while the document above reveals [REDACTED]

[REDACTED] comparison of the rate paid by Spotify to Universal for its advertising-supported interactive services in Professor Willig's opportunity cost calculation in *SDARS III* with the rate he calculates in this proceeding [REDACTED]. Those data are consistent with [REDACTED]

Mr. Orszag infers a shift in bargaining power based on how a single contractual term—the rates for subscription interactive services—changed over time, but this inference is not reasonable.<sup>61</sup> In general, renewal discussions between Spotify and the major labels led to a number of changes and concessions from both sides in the new contracts. Furthermore, as emphasized above, [REDACTED]

#### The Majors

Turning from Spotify to all interactive services, Mr. Orszag purports to show in Table 15 of his WDT that effective royalty rates have [REDACTED] for all interactive services. For all of the services he includes, his Table 15 shows a [REDACTED], from [REDACTED] percent of revenue in 2015 to [REDACTED] percent of revenue during the first four months of 2019.<sup>63</sup> However, it is more informative to look at the rates charged for all subscription plans, not just full-price plans.

In his *SDARS III* testimony, Mr. Orszag reported that the effective rate for all individual subscription plans for interactive services (i.e., whether full price or discounted) during 2014-

<sup>59</sup> *Id.* at 787.

<sup>60</sup> An internal [REDACTED]. See SOUNDEX\_W5\_000169141 (SXM-PAN Reb. Ex. 019). In the *SDARS III* proceeding, Professor Willig calculated that Spotify paid Universal a royalty rate of [REDACTED] per performance for its advertising-supported service in 1H2016. Professor Willig *SDARS III* WDT at B-6. That compares to the [REDACTED] per performance royalty rate paid by [REDACTED] during the April 2018 to March 2019 time period, as calculated by Professor Willig in this proceeding. Willig CWDT at Exhibit D.2. SOUNDEX\_W5\_000169141 (SXM-PAN Reb. Ex. 019) (Jan. 19, 2016 Spotify deal discussion presentation) at p. 3 (reporting U.S. effective rate on Spotify free tier at [REDACTED]); see also Harrison Dep. at 16:22-17:5 (confirming that [REDACTED] was U.S. effective rate in 2015).

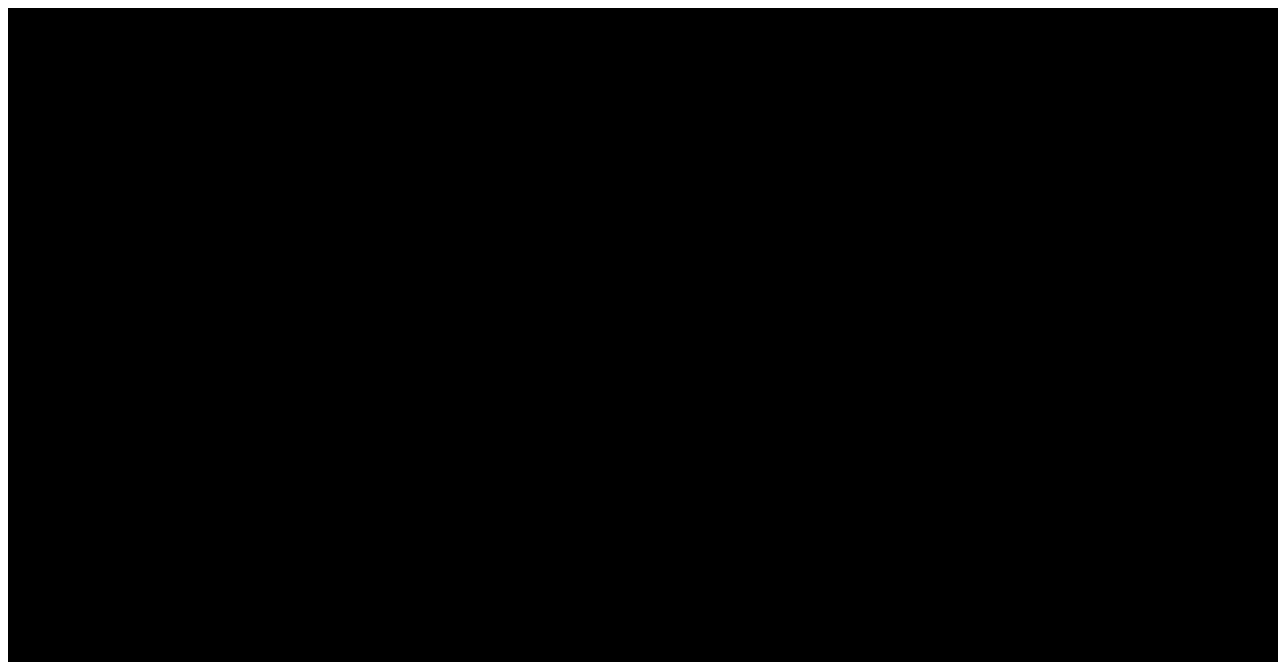
<sup>61</sup> In particular, this point applies to Mr. Orszag's discussion of changes in the royalties paid by Spotify to Warner for family subscriptions. Orszag WDT at ¶¶154-5.

<sup>62</sup> See SOUNDEX\_W5\_000103352 (SXM-PAN Reb. Ex. 020) (Warner internal discussion of Spotify negotiations); Adadevoh WDT at n. 16 (noting role of [REDACTED]); Adadevoh deposition at 155-6 [REDACTED]

<sup>63</sup> Compare Tables 7 and 15 in the Orszag WDT.

2016 was [REDACTED].<sup>64</sup> This is virtually the [REDACTED] he computes in this proceeding for undiscounted plans (excluding family, student, military, employee, trial, and promotional subscriptions) during the May 2018 to April 2019 time period, which is [REDACTED] percent of revenue,<sup>65</sup> and during the January to April 2019 time period, which is [REDACTED] percent.<sup>66</sup> Notably, as shown below in Figure 4, the average royalty rate during May 2018 to April 2019 for all interactive services and all subscription plans was [REDACTED] percent of revenue, which is actually [REDACTED] reported by Mr. Orszag for 2014-2016 in the *SDARS III* proceeding.

Figure 1 below modifies Table 15 from the Orszag WDT to include all subscription plans, not just those sold at full price. These data do not show a meaningful decline in royalty rates since the time of the *SDARS III* Determination, when the Judges determined that the market for licensing recorded music to interactive subscription services was not effectively competitive.



[REDACTED]

#### *d. Summary*

Mr. Orszag's claim that Spotify and Apple Music are "must-have" services for the Majors does not withstand scrutiny. An impasse with Spotify or with Apple Music would cause a major record company to lose only a small (and far from life-threatening) fraction of its revenue, properly measured over time using present discounted value.

Mr. Orszag also has conflated the ability of interactive services to influence music selection with services' use of price-based steering to drive lower royalty rates from the major record companies. The former is not in dispute, but there is little to no evidence of the latter. Mr. Orszag

<sup>64</sup> *SDARS III* Determination at 65243; Orszag *SDARS III* AWDT at n. 36.

<sup>65</sup> Orszag WDT at ¶83; Table 7.

<sup>66</sup> Orszag WDT at ¶153; Table 15.



has provided no meaningful evidence of price competition among the Majors. Indeed, [REDACTED]

Mr. Orszag has not shown that the rates charged by the Majors have [REDACTED] since the time of *SDARS III*. Furthermore, to the extent that the Majors [REDACTED] for its subscription service, after accounting for [REDACTED]

### ***B. The Flaws in Mr. Orszag’s Benchmarking Approach to Rate Setting for Subscription Webcasters***

This section addresses Mr. Orszag’s rate proposals for *subscription* webcasters, which are based on his benchmarking approach. His benchmarks are taken from the market just discussed, the upstream market for the licensing of recorded music to subscription interactive services.

Before delving into the details, there is an easy way to see that something is amiss with Mr. Orszag’s benchmarking approach: the benchmark rates that Mr. Orszag uses have changed little if at all since *Web IV* (and he claims they have gone *down*), yet the statutory rates he proposes are well *above* the current *Web IV* rates. This section explains how Mr. Orszag obtained this anomalous result.

Mr. Orszag claims his benchmark methodology for statutory subscription services is “using the concept of ‘ratio equivalency’ as adopted and explained by the Judges in the *Web IV Determination*.”<sup>67</sup> I disagree. As explained below, Mr. Orszag departs from the *Web IV* “ratio equivalency” methodology in a number of significant ways. As a result of these departures, he obtains a considerably higher proposed rate than the rate that would be derived by applying the *Web IV* methodology to the subscription interactive services royalty rates upon which he relies.

The following subsections identify Mr. Orszag’s departures from the *Web IV* “ratio equivalency” methodology and show how these deviations lead Mr. Orszag to propose a statutory rate well above the rate implied by a faithful application of the *Web IV* methodology. Once Mr. Orszag’s benchmark approach is supplemented with appropriate adjustments laid out in the *Web IV Determination*, the resulting rates are consistent with or below the current *Web IV* rates.

#### **1. Mr. Orszag Deviates From “Ratio Equivalency” as Used in *Web IV***

Mr. Orszag claims that he is employing the concept of “ratio equivalency” as that concept was used by the Judges in *Web IV* for subscription webcasters, updated to reflect changes in the upstream market for the licensing of recorded music to interactive services. This is not accurate.

To see why, it is useful to revisit and describe the “ratio equivalency” approach adopted (to a limited degree) in the *Web IV Determination*, which was put forward by Professor Daniel Rubinfeld on behalf of SoundExchange.

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<sup>67</sup> Orszag WDT at ¶74.



Immediately below, I walk through a series of equations to help demonstrate my points, but the basic *Web IV* benchmarking approach is fairly simple: first calculate the per-performance rate in the benchmark market,<sup>68</sup> and then apply an interactivity adjustment to that rate based on the ratio of retail prices in the target and benchmark markets. This interactivity adjustment is based on the assumption that those retail prices reflect the value of interactivity.<sup>69</sup>

Using *B* to denote the benchmark market and *T* to denote the target market, this approach can be described using the following equation.<sup>70</sup>

$$\text{Web IV Rate} = \frac{\text{Royalties}_B}{\text{Plays}_B} \times \frac{\text{Revenue}_T}{\text{Subscribers}_T} \times \frac{\text{Subscribers}_B}{\text{Revenue}_B}. \quad (1)$$

The first term here is the effective per-performance rate in the benchmark market: how much the benchmark services pay per performance. The two other terms comprise the interactivity adjustment, which is equal to the ratio of the average price paid by subscribers in the target market (i.e., revenue per subscriber) to the average price paid by subscribers in the benchmark market.<sup>71</sup> Therefore, if the subscription price for non-interactive services is half that of interactive services, the benchmark royalty per performance would be cut in half as well, on the theory the royalty paid should constitute an equivalent share of that price. Hence the term “ratio equivalency.”

Rearranging terms, equation (1) can be written as

$$\text{Web IV Rate} = \text{Royalty}_B \times \frac{\text{Revenue}_T}{\text{Revenue}_B} \times \frac{\text{Subscribers}_B}{\text{Subscribers}_T} \times \frac{1}{\text{Plays}_B} \quad (2)$$

The Orszag WDT here does *not* follow this same approach. Instead, Mr. Orszag first computes and states the benchmark royalties paid as a *percentage of revenue* in the benchmark market, and then applies this percentage to revenue in the target market. Mr. Orszag thus requires the target service to pay the same percent-of-revenue as the benchmark service, *not* the same per-performance rate (adjusted for the value of interactivity). Only after applying the benchmark percentage of revenue does he convert the total target-market royalties into a per-performance

<sup>68</sup> In *Web IV*, Professor Rubinfeld used the *contractual* per-performance rate in the benchmark market for this purpose. As explained in my CWDT, it is reasonable in this proceeding to instead use the *effective* per-performance in the benchmark rate for this purpose, in part because most record companies [REDACTED]. See Shapiro

CWDT at 39. The derivation that follows applies whether one uses contractual or effective per-performance rates.

<sup>69</sup> See *Web IV* Determination at 26338 (“Dr. Rubinfeld applied what he considered to be a reasonable and conservative figure within this range, 2.00, as a discount factor to make his proffered downward “interactivity adjustment” to the royalty rate for interactive services, which he then applied to determine his proposed royalty rate for noninteractive services.”)

<sup>70</sup> See *Web IV* Determination at 26338 (“Dr. Rubinfeld applied what he considered to be a reasonable and conservative figure within this range, 2.00, as a discount factor to make his proffered downward “interactivity adjustment” to the royalty rate for interactive services, which he then applied to determine his proposed royalty rate for noninteractive services.”) For the purpose of this demonstration, I suppress the other appropriate adjustments, such as for skips, discussed elsewhere in my testimony.

<sup>71</sup> In practice, the *Web IV* methodology used the ratio of list prices for subscription services, rather than the ratio of the average revenue per subscriber per month. This difference does not impact the basic point being made here about how Mr. Orszag has departed from the *Web IV* “ratio equivalency” methodology.

rate by using the number of plays in the target market.<sup>72</sup> Mr. Orszag’s different approach can be described using the following equation:

$$\text{Orszag Rate} = \frac{\text{Royalty}_B}{\text{Revenue}_B} \times \text{Revenue}_T \times \frac{1}{\text{Plays}_T}. \quad (3)$$

The first term is the percentage-of-revenue rate in the benchmark market. This rate is multiplied by revenue in the target market to obtain total royalties in the target market. Those total royalties are then divided by the number of plays in the *target* market to obtain the per-performance rate.

Rearranging terms, equation (3) can be written as

$$\text{Orszag Rate} = \text{Royalty}_B \times \frac{\text{Revenue}_T}{\text{Revenue}_B} \times \frac{1}{\text{Plays}_T}. \quad (4)$$

Comparing equations (2) and (4), the first two terms are identical, but the remaining terms differ. Taking the ratio of these two equations, the common terms cancel out, and what remains is

$$\frac{\text{Orszag Rate}}{\text{Web IV Rate}} = \frac{\text{Plays}_B / \text{Subscribers}_B}{\text{Plays}_T / \text{Subscribers}_T}. \quad (5)$$

This equation can be rewritten as

$$\text{Orszag Rate} = \text{WebIV Rate} \times \frac{\text{Plays}_B / \text{Subscribers}_B}{\text{Plays}_T / \text{Subscribers}_T}. \quad (6)$$

The final term in equation (6) is the ratio of the number of performances per-subscriber per-month (“PSPM”) in the benchmark market to that number in the target market. In other words, the Orszag methodology *alters* the per-play rate derived from the *Web IV* methodology by that play ratio: the *Web IV* rate is driven higher if there are relatively fewer plays in the target market, and lower if there are relatively more monthly plays in the target market.

This comparison shows that, contrary to his claims, Mr. Orszag has deviated from the *Web IV* methodology. Rather than charging target services the same per-play fee as paid by the benchmark service (adjusted solely for interactivity based on relative retail prices), his new approach will only generate the same proposed rate for the target market as the *Web IV* methodology if the number of performances per-subscriber per-month in the benchmark market is equal to that number in the target market.

In fact, however, the number of performances per-subscriber per-month is significantly lower in the target market proxy used by Mr. Orszag than in the benchmark market. This biases his proposed per-performance royalty rate upward. Figure 2 shows the average number of performances PSPM for the benchmark interactive services and for the limited subscription services (Pandora, Rhapsody, and iHeart) that Mr. Orszag uses as a proxy for the target market. Focusing on the Spotify undiscounted plans that Mr. Orszag uses as his preferred benchmark, the average number of performances PSPM on Spotify during the time period used by Mr. Orszag

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<sup>72</sup> Note that the approach Mr. Orszag adopts here and the *Web IV* approach correspond, respectively, to the “Approach One” and “Approach Two” that Mr. Orszag employed for applying the interactive subscription benchmark in *SDARS III*. See *SDARS III* Determination at 65244-5.

was [REDACTED] The average number of performances PSPM for the limited subscription services was [REDACTED] Thus, the number of performances PSPM on Spotify was [REDACTED].

[REDACTED]

[REDACTED]

[REDACTED]

Therefore, applying equation (6) above, the rate calculated using Mr. Orszag's methodology is [REDACTED] larger the rate that would be calculated by properly following the *Web IV* methodology.

This difference is due solely to the fact that [REDACTED]. Mr. Orszag provides no explanation, let alone justification, for boosting the per-performance rate paid by noninteractive services by [REDACTED] due to the [REDACTED]

Mr. Orszag does not acknowledge or discuss his departure from the *Web IV* methodology. His departure is especially peculiar given that he is proposing a per-performance rate rather than a percentage-of-revenue rate in this proceeding. He could have taken the same straightforward approach used by the Judges in *Web IV* (and, incidentally, followed in my CWDT): calculate the per-performance rate in the benchmark market, and then make suitable adjustments, including an

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<sup>73</sup> This computation uses the same royalty data reflecting payments from services to major record labels that Mr. Orszag used in his benchmark calculations for the twelve month period from May 2018 to April 2019. The calculation is reported average monthly performances for all record companies divided by the average number of subscribers.

interactivity adjustment based on the ratio of retail prices, to obtain a proposed per-performance rate in the target market. Instead, Mr. Orszag departed from the *Web IV* methodology by taking a roundabout approach that involves calculating percentage-of-revenue rates and then converting them into per-performance rates that will vary widely based on divergences in the number of performances and the proxy services used for such play counts.

Mr. Orszag's roundabout approach introduces another problem as well. His approach requires measuring revenue in the target market so one can apply the percent-of-revenue figure obtained from the benchmark market to that target-market revenue. However, measuring the revenue attributable to subscription webcasting services is difficult if not impossible, as Mr. Orszag acknowledges. Indeed, Mr. Orszag gives this as a reason why the appropriate rate structure for subscription webcasting is a per-performance rate rather than a percent-of-revenue rate.<sup>74</sup> As explained in my CWDT and in the Orszag WDT, many of the services using the statutory subscription service rate, including what I understand to be the two largest services that rely on the statutory rate for most of their performances—the Sirius XM webcasting service and TuneIn radio—offer music webcasting in conjunction with other non-music offerings (and, in the case of Sirius XM, its satellite service). This bundling makes it extremely difficult to measure the revenue attributable to those services, as would be needed to apply a benchmark percent-of-revenue rate to those services. This is one reason why the appropriate benchmarking methodology here would be to start with a per-performance rate from the benchmark market and simply adjust that per-performance fee by the ratio of retail prices to obtain a per-performance rate for the target market.

Because of the difficulty of attributing revenue to statutory subscription services, Mr. Orszag's already roundabout approach requires him to take yet another detour. Because he cannot measure revenue in the target market, he applies his percent-of-revenue rate to a collection of *limited interactive* services, none of which is actually in the target market.<sup>75</sup> All of the services that Mr. Orszag uses have negotiated direct licenses with the major record companies, and all provide non-statutory functionality to their subscribers. Because these services offer additional functionality that consumers value, the average revenue per subscriber very likely exceeds what statutory subscription services could charge. Put differently, Mr. Orszag is mistakenly using a proxy for revenue for statutory services that is inflated by extra-statutory functionality. This inflates the implied royalty payments (because the benchmark royalty percentage is applied to an inflated revenue base). Mr. Orszag then compounds that mistake by using the lower relative play counts on the target services to reach an even more inflated per-performance statutory rate. At the very least, this detour, using limited interactive services as a proxy for statutory services, requires an adjustment, which Mr. Orszag does not make. That adjustment is discussed below.

In the remainder of this section, I show how Mr. Orszag's other deviations from the *Web IV* methodology impact the proposed statutory rate, computed both (a) using his new, roundabout approach, and (b) using the more straightforward approach actually employed in *Web IV*.

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<sup>74</sup> Orszag WDT at ¶82.

<sup>75</sup> The limited interactivity services used by Mr. Orszag are Pandora, iHeart, and Rhapsody. Orszag WDT at ¶85.



## 2. Mr. Orszag Improperly Excludes Discounted Subscription Plans

When looking at subscription interactive services, Mr. Orszag excludes family, student, military, employee, trial, and promotional service offerings.<sup>76</sup> His stated reason for excluding all of these discounted plans is that he does not have a basis to compare the usage of discounted plans between the benchmark and target markets.<sup>77</sup>

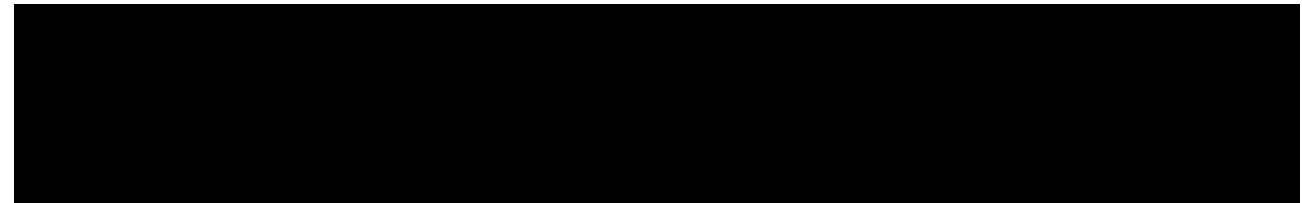
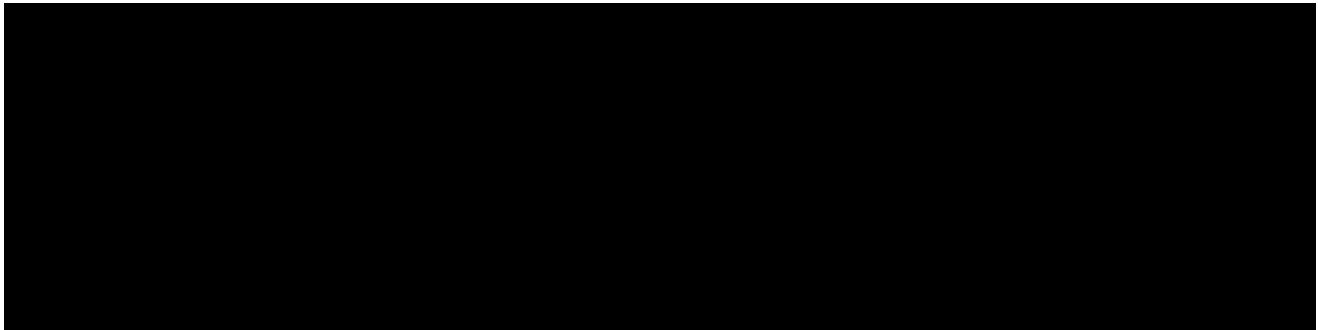
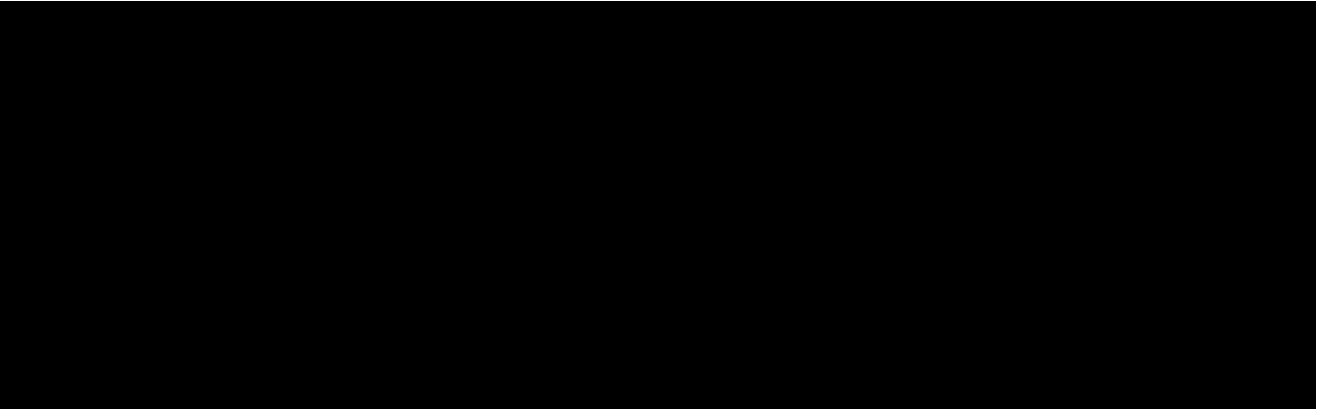
This is not a valid basis to exclude discounted plans. The per-performance *statutory* rate will be applied to all subscribers, whether they are on a standard plan or a discounted plan. Therefore, for proper comparability, the benchmark rate should be calculated using all subscribers in the *benchmark* market.<sup>78</sup> Figure 3 shows how the calculations underlying Table 7 in the Orszag WDT change if one includes all plans from the benchmark market.

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<sup>76</sup> Orszag WDT at ¶83.

<sup>77</sup> Orszag WDT at ¶83. As noted above, this is a departure from Mr. Orszag's subscription interactive benchmark methodology in *SDARS III*, in which Mr. Orszag did not exclude discounted plans from his benchmark calculation. Orszag *SDARS III* AWDT at n. 36.

<sup>78</sup> While it is true that the proportion of discounted subscriptions may differ as between the benchmark and target markets, and that some adjustment might be appropriate under Mr. Orszag's methodology if the difference in mix were known, Mr. Orszag's solution effectively assumes that there are *no* discounted subscriptions in the target market. In the absence of evidence to the contrary, a far more sensible assumption is that the mix between standard plans and discounted plans in the target market is comparable to the mix observed in the benchmark market.



██████████

Panel A replicates Table 7 from the Orszag WDT. Panel B performs the same computations using all types of plans. The differences are substantial. For Spotify, Mr. Orszag calculates a royalty per play of ██████████ but that rate is only ██████████ if one includes all Spotify plans, a rate ██████████ than the one that Mr. Orszag calculates. For all subscription interactive services, Mr. Orszag calculates a royalty per play of ██████████, but that rate is only ██████████ if one includes all plans, a rate ██████████ than the one that Mr. Orszag calculates.

### **3. Mr. Orszag Fails to Account for the Lack of Effective Competition in the Interactive Services Market**

As noted above, in the *Web IV* proceeding, the Judges found that the upstream interactive services market was subject to the complementary oligopoly power of the major record companies and thus was not effectively competitive.<sup>79</sup> In addition, they concluded that the rate

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<sup>79</sup> *Web IV* Determination at 26353 (“For these reasons, the Judges find that Dr. Rubinfeld’s interactive benchmark is only applicable when.... a steering adjustment is made to eliminate the complementary oligopoly effect and thereby provide for an effectively competitive market price.”) In *Web IV*, the Judges used the upstream interactive services market as a benchmark solely for subscription webcasting services, and only after making an effective competition

based on the ratio equivalency approach employed by SoundExchange's expert was infected by that same complementary oligopoly power: "Thus, [SoundExchange's expert's] 'ratio equivalency' will simply sustain whatever complementary oligopoly price distortions are present in the interactive marketplace."<sup>80</sup>

In the *SDARS III* proceeding, Mr. Orszag likewise used royalties from the subscription interactive market as a benchmark for statutory royalties for satellite radio.<sup>81</sup> And as he does now, Mr. Orszag argued that the subscription interactive market had become effectively competitive since the time of *Web IV*, so that no adjustment for effective competition was necessary.<sup>82</sup> The Judges rejected Mr. Orszag's argument in *SDARS III* and determined that the subscription interactive market was not an appropriate benchmark for satellite radio and that "the interactive benchmark is tainted by a complementary oligopoly effect that cannot be mitigated, on the present record, by a fact-based steering adjustment."<sup>83</sup> Given those findings, convincing new evidence would be needed to conclude that the interactive services market has become effectively competitive since the *SDARS III* proceeding so that royalty rates from that market are an appropriate benchmark here without suitable adjustment.

Here again, Mr. Orszag argues that the interactive services market has recently become effectively competitive, so the royalty rates determined in that market can be used with little or no effective-competition adjustment.<sup>84</sup> In contrast, in my CWDT, I make an effective-competition adjustment to the rates set in this benchmark market.

For the reasons given in Section II.A, I strongly disagree with Mr. Orszag's analysis and conclusions regarding the state of competition in the upstream interactive services market. I continue to believe that royalty rates from that market are subject to the complementary oligopoly power of the major record companies and, if used as benchmarks here, they require a substantial effective-competition adjustment.

Mr. Orszag's proposed rate of \$0.0033 per performance is based on using Spotify as a benchmark. He appears to believe that by using Spotify as a benchmark he is addressing possible concerns about the lack of effective competition in his benchmark market, because he claims that

[REDACTED]

As also discussed in Section II.A, I disagree with Mr.

adjustment. They did not use the upstream interactive services market as a benchmark for advertising-supported webcasters.

<sup>80</sup> *Web IV* Determination at 26348.

<sup>81</sup> *SDARS III* Determination at 65242. For ease of exposition, below I regularly drop the "upstream" modifier to the interactive services market.

<sup>82</sup> *SDARS III* Determination at 65245. Mr. Orszag based this conclusion on a number of observations that closely resemble his basis for asserting in this proceeding that the subscription interactive service market has become effectively competitive, including supposed countervailing "must-have" power by large premium streaming services; the growing importance of streaming royalties to record companies; and the alleged inability of major record companies to set prices above the market rate.

<sup>83</sup> *SDARS III* Determination at 65248, 65258.

<sup>84</sup> Orszag WDT ¶¶ 86, 100-157.

<sup>85</sup> Orszag WDT at ¶86.



Orszag's assertion that the royalty rates negotiated between record companies and Spotify reflect effective competition or countervailing market power.

Table 7 in the Orszag WDT indicates that his methods would imply a rate of [REDACTED] per performance if one were to use all interactive services instead of just Spotify. His use of Spotify alone as a benchmark thus leads to a rate that is some [REDACTED] than using all interactive services as benchmarks. This is about one-half as large as the effective competition adjustment used by the Judges in the *Web IV* Determination. Thus Mr. Orszag is in essence making the rather startling claim that, because the Majors [REDACTED]

[REDACTED] the rates charged to other interactive services, it is no longer necessary to make a competition adjustment that would [REDACTED]

[REDACTED] The net effect of Mr. Orszag's approach is that because the interactive service marketplace (or at least negotiations with Spotify) has supposedly become more competitive, the benchmark rate he proposes actually *increases* by about 6% [REDACTED]. This does not make any economic sense.

For the reasons just discussed, there is no sound basis for using Spotify royalty rates as a proxy for effectively competitive rates. But it is also worth noting that by using a single interactive service as a benchmark, Mr. Orszag is sacrificing the advantages of using a broad-based measure of effective royalty rates for the whole subscription interactive services market. A market-wide measure of effective royalty rates depends on the characteristics of the market as a whole, whereas rates negotiated with a single service also depend on idiosyncratic aspects of the deals between record companies and that service. The interactive services benchmarks proposed by Professor Rubinfeld in *Web IV* and by Mr. Orszag in *SDARS III* used a broad measure of royalty rates across all interactive services for which data were available as a benchmark. As discussed above, there were a number of unique aspects of the 2017 Spotify deal [REDACTED]

[REDACTED] that do not apply to the industry as a whole. Mr. Orszag's Spotify benchmark is inevitably infected by the impact of these idiosyncratic tradeoffs, which would be mitigated with more broadly based benchmarking.

Section II.B.4 applies a suitable effective competition adjustment along with other necessary rates to the rates generated using Mr. Orszag's benchmark.

#### **4. The Royalty Rates for Subscription Webcasters that Result from the Necessary Adjustments to Mr. Orszag's Benchmarking Exercise**

Separate and apart from Mr. Orszag's erroneous methodology for applying "ratio equivalency" and his exclusion of discounted plans and other interactive services, Mr. Orszag's proposed rates require significant additional adjustments as well. Applying benchmarking principles that the Judges have used in prior proceedings, I identify those adjustments below and quantify their impact on the proposed statutory royalty rates.

##### ***a. Skipped Tracks***

In *Web IV*, the Judges made an adjustment for skipped tracks, meaning tracks played for less than 30 seconds. This adjustment is needed because of a difference in the definition of compensable performances between the direct licenses being used as benchmarks and the statutory license.

The direct licenses between record companies and interactive services that Mr. Orszag uses as benchmarks specify that only performances of at least thirty seconds are compensable. By contrast, under the statutory license, all performances of any length are compensable. Since the statutory license uses a broader base of performances, the appropriate per-performance rate in the statutory license must be lower than the corresponding benchmark rate to provide the same overall level of compensation to record companies. So far as I am aware, this adjustment was not controversial in the *Web IV* proceeding.

Mr. Orszag does not make, or even discuss, an adjustment to account for skipped tracks. Unless there is a change in regulations that makes skipped tracks non-compensable under the statutory license, his proposed rate should be corrected to account for this omission.

In this testimony, I use a 1.11:1 adjustment for skipped tracks. This adjustment is based on the proportion of performances of less than thirty seconds on Pandora.

***b. Limited Interactive Services vs. Non-Interactive Services***

Mr. Orszag discusses whether there should be an adjustment for the difference in value between the rights licensed to limited interactive subscription services, which he uses as a proxy for the target market, and the more limited rights available under the statutory license.<sup>86</sup> He states:

“I assume that the modest additional functionality received by Pandora, iHeart, and Rhapsody from their direct licenses has some value to the services and their users. However, I have no empirical basis to conclude that the additional functionality has increased revenue without also increasing plays.”<sup>87</sup>

My CWDT provided an empirical basis on which to make a per-performance adjustment to reflect the added rights available to limited interactive services:

“The royalty rate for a statutory subscription service is \$.0023 per performance. As shown in Table 5, the effective royalty rate paid for a limited interactivity subscription service is [REDACTED]. Therefore, an additional adjustment factor of [REDACTED], is needed to account for the greater value of a service offering limited interactivity compared to a statutorily compliant service.”<sup>88</sup>

This evidence clearly establishes that the rights obtained by a limited interactivity subscription service are substantially more valuable than the statutory rights.

Mr. Orszag attempts to justify his failure to make this adjustment by pointing to Pandora’s previous statutory service, Pandora One, which had the same \$4.99 list price as Pandora’s current *non*-statutory service, Pandora Plus, despite Pandora Plus offering additional *non*-statutory features.<sup>89</sup> He suggests that this demonstrates a lack of market value for the extra features now available on Pandora Plus. However, as Mr. Orszag himself notes, this may simply reflect stickiness in list prices. More important, the evidence shows that Pandora was having

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<sup>86</sup> Orszag WDT at ¶¶176-181.

<sup>87</sup> Orszag WDT at ¶179.

<sup>88</sup> Shapiro CWDT, p. 37.

<sup>89</sup> Orszag WDT at ¶179.



difficulty attracting subscribers to Pandora One and chose to add new features to Pandora Plus to attract more subscribers rather than lowering the subscription price.<sup>90</sup> These new features were valuable to consumers, increasing the demand for Pandora One. Pandora was willing to pay a significant premium over the statutory rates to provide those features to consumers (something it would make no sense to do if Mr. Orszag were correct that those features had little or no value), and chose to use that value to increase subscription quantity, not price.

Mr. Orszag attempts to justify not making any adjustment here by referring to a footnote in the *Web IV* Determination related to a discussion of whether the interactive subscription benchmark proposed by Professor Rubinfeld on behalf of SoundExchange should have been adjusted for the value of limited interactive functionality. However, Mr. Orszag does not cite what the Judges said in the main text leading up to that footnote:

“Dr. Rubinfeld should have made a further interactivity adjustment to reflect whatever marginal value was attributable to the additional functionality of his stand-ins for the services that he used as proxies for truly DMCA compliant services.”<sup>91</sup>

My CWDT provides a reliable way to make that “further interactivity adjustment.”<sup>92</sup> The royalty data for limited interactive services shows that this increased value is significant.<sup>93</sup> Specific evidence to make this further adjustment was not available to the Judges in *Web IV*.

### *c. Effective Competition*

As discussed above, the evidence shows that the interactive subscription market is plagued by complementary oligopoly power, and therefore is not effectively competitive. I therefore apply below the same 1.32:1 effective competition adjustment that I use in my CWDT.<sup>94</sup>

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<sup>90</sup> See Chris Phillips WDT at ¶¶18-23.

<sup>91</sup> *Web IV* Determination at 26348.

<sup>92</sup> Mr. Orszag conjectures without evidence that the additional functionality increases subscribers and plays without increasing revenue per play. However, this makes little economic sense: as referenced above, webcasters pay 35% more in per-performance royalties in return for the right to offer additional functionality. This additional functionality shifts out the demand curve for the limited interactive product, increasing its per-performance value.

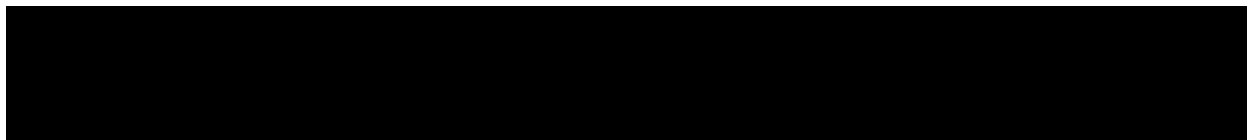
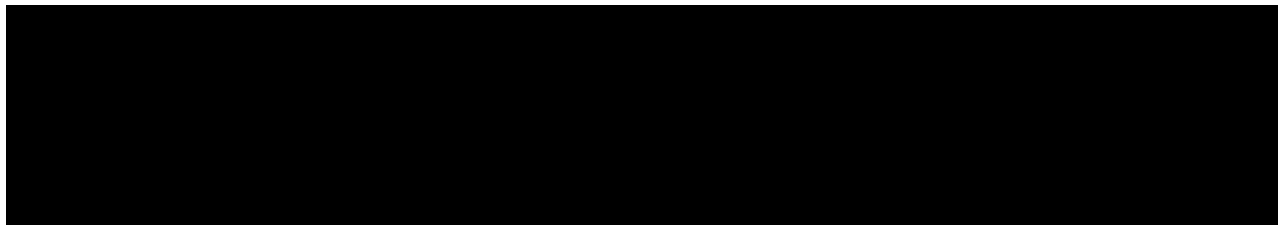
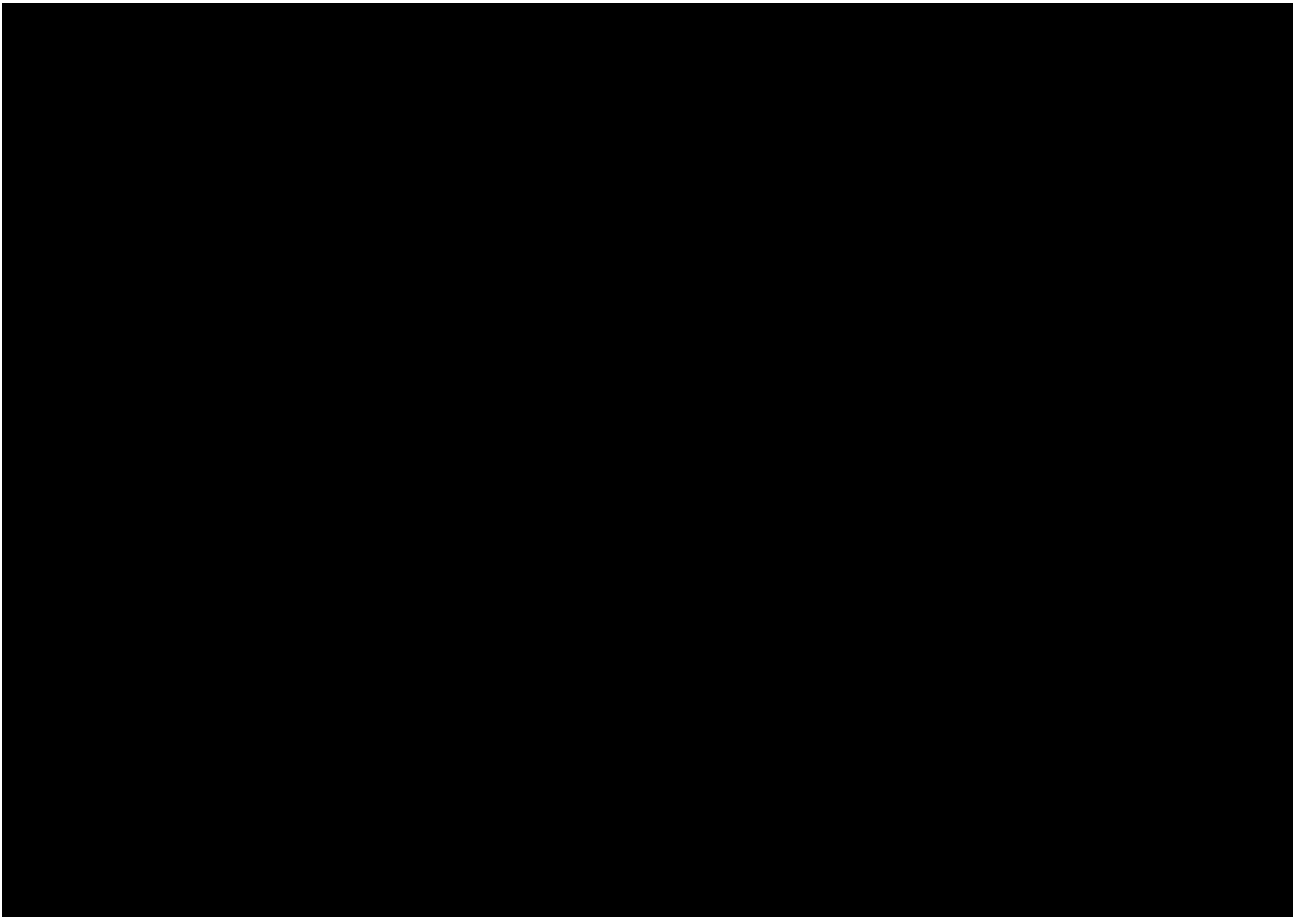
<sup>93</sup> Mr. Orszag points to terms in the contract between Pandora and Sony to suggest that the additional value of limited interactive functionality is minimal. However, he misinterprets these contract terms. The Sony contract with Pandora specifies a royalty rate [REDACTED] for non-interactive plays, and then [REDACTED]. For pinned tracks (always first on a playlist), interactive tracks in a branded content program, and tracks in a custom playlist, the royalty rate for [REDACTED] the rate for non-interactive plays. For [REDACTED]

[REDACTED] To see this, suppose the contract instead specified no change in the royalty for statutory plays, but a royalty of R for non-statutory replays and skips, and that those non-statutory plays comprised 3% of all plays. The total royalty under this alternative formula would generate the same revenues as the contractual formula if  $(97\%) \times (\$0.0018) + (3\%) \times R$  [REDACTED]. Solving for R gives R = [REDACTED]. Orszag WDT at ¶181; SOUNDEX\_W5\_000002955, Streaming Agreement between Pandora and SME (September 12, 2016) at 10-11; PANWEBV\_00000064\_Pandora\_WebV\_001, Amendment No. 2, Streaming Agreement between Pandora and SME (July 1, 2018) at 6; SoundExchange Exhibit 027, Amendment No. 4, Streaming Agreement between Pandora and SME (July 1, 2018) at 3-4.

<sup>94</sup> Shapiro CWDT at 38.

*d. Summary*

The combined effect of the required adjustments to Mr. Orszag's benchmark rates is substantial. Figure 4 shows the effects of these adjustments, using Mr. Orszag's percentage-of-revenue benchmarking methodology. The middle columns use the royalty rates paid by Spotify as the benchmark, as Mr. Orszag does. The right-hand column uses the royalty rates paid by all interactive subscription services as the benchmark, a superior approach. Figure 4 reports results using just undiscounted subscription plans (as Mr. Orszag does) and using all subscription plans. As explained above, the proper approach is to use all subscription plans.



Column (1) in Figure 4 shows that Mr. Orszag's proposed rate of \$0.0033 per performance becomes ██████ per performance after the required adjustments for skips, limited interactivity, and competition. Column (2) shows that one obtains a rate of ██████ per performance if one uses all Spotify subscriptions plans as the benchmark and makes these same adjustments. Column (3) repeats this analysis using all subscription interactive services and all subscription plans as the benchmark. The results are very similar.<sup>95</sup>

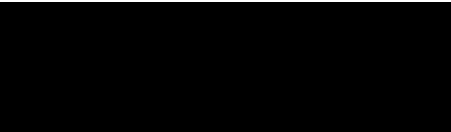
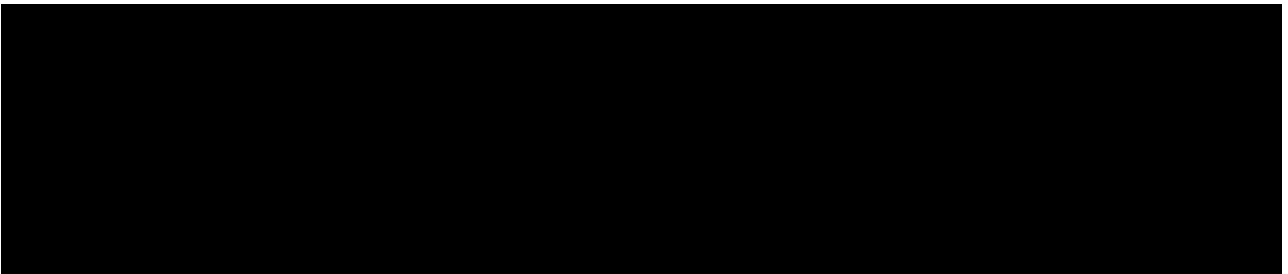
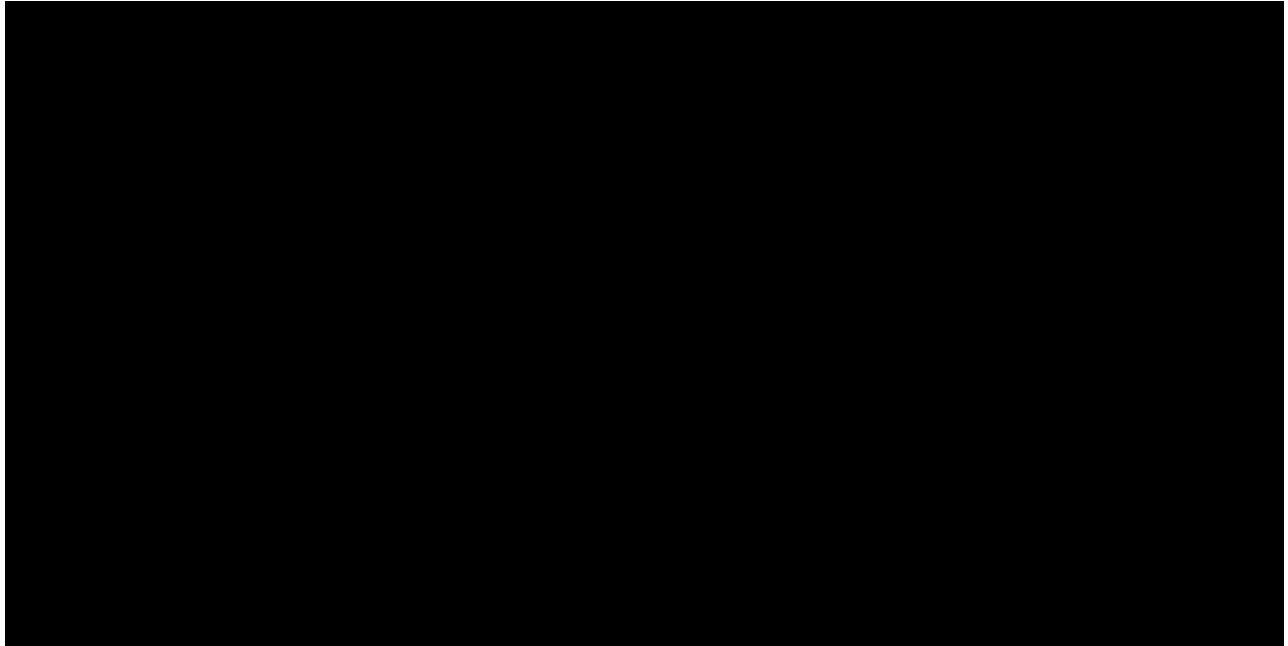
While I do not agree that Mr. Orszag's methodology is appropriate, even if one applies his flawed methodology but makes the three required adjustments that he did not make, one obtains statutory rates between ██████ to ██████ per performance. These are below the current *Web IV* subscription rate and far below the \$0.0033 rate proposed by Mr. Orszag.

Figure 5 shows the impact of these three required adjustments using the *Web IV* ratio equivalency methodology. This approach begins by calculating the per-performance rate in the benchmark market and then making adjustments to obtain a per-performance rate in the target market. As in the previous figure, I show the rate implied by this methodology using two different benchmarks, Spotify and all interactive services, and for both the limited subset of subscriptions considered by Mr. Orszag and for all subscriptions.

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<sup>95</sup> After computing the benchmark rate and making necessary adjustments for skips and the value of limited interactivity, the rate based on all Spotify plans is ██████ per performance. This is only about ██████ than the rate of ██████ per performance calculated by using all interactive services as the benchmark. This undermines Mr. Orszag's claim that Spotify has so much countervailing power that no effective competition adjustment is needed if the royalty rates paid by Spotify are used.





Column (1) in Figure 5 shows that using Spotify undiscounted plans as the benchmark gives a statutory rate of [REDACTED] per performance. Column (2) shows that using all Spotify subscription plans as the benchmark gives a statutory rate of [REDACTED] per performance. Column (3) in Figure 5 shows that using all subscription plans at all interactive services as the benchmark gives a statutory rate of [REDACTED] per performance.

Figure 5 shows that, once all subscription plans are included and all necessary adjustments are made, proper application of the “ratio equivalency” methodology from *Web IV* gives statutory subscription rates of between [REDACTED] and [REDACTED] per performance. These rates are below the statutory subscription rate of \$0.0016 per performance reported in my CWDT using the Web IV “ratio equivalency” methodology.<sup>96</sup>

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<sup>96</sup> Shapiro CWDT at 40. The lower rate obtained here based on all interactive services is due to Mr. Orszag using fewer interactive subscription services in his all interactive service computation and not including the value of Spotify’s marketing grants. If the Judges were to determine (incorrectly, in my opinion) that the Spotify royalty rate reflects the forces of effective competition, so that no further effective competition adjustment would be necessary if

### ***C. The Flaws in Mr. Orszag’s Benchmarking Approach to Rate-Setting for Advertising-Supported Webcasters***

This section addresses Mr. Orszag’s rate proposals for *advertising-supported* webcasters. Mr. Orszag generates these rate proposals using a benchmarking approach. His benchmarks again are taken from the upstream market for the licensing of recorded music to interactive services. Notably, he uses the rates paid by *subscription* interactive services as benchmarks, not the rates paid by *advertising-supported* interactive services, which were equally available to him.

#### **1. Mr. Orszag’s Approach is Inconsistent With Web IV**

Mr. Orszag begins his analysis by stating: “I recognize that in the Web IV proceeding the Judges rejected the use of interactive services as a benchmark for ad-supported noninteractive services. My approach to this analysis, however, differs significantly from the approach presented in Web IV and, I believe, addresses the Judges’ expressed concerns.”<sup>97</sup>

I disagree. For the reasons given below, I do not believe that Mr. Orszag has adequately addressed the concerns expressed by the Judges in *Web IV* about using subscription interactive service rates as a benchmark for advertising-supported noninteractive service rates.

In their *Web IV* Determination the Judges discussed the conditions necessary for “ratio equivalency” to apply as between the benchmark market and the target market. They stated that customers in the two markets should have similar willingness to pay (“WTP”), including comparable demand elasticities.<sup>98</sup>

Regarding the first condition, Mr. Orszag argues that the services’ WTP for recorded music is what matters, and that advertising-supported services have a positive WTP based on their ability to earn advertising revenue. That is true to a degree, but falls far short of establishing a similar WTP as between the benchmark subscription interactive market and the target advertising-supported non-interactive market. Mr. Orszag also notes that users of advertising-supported services “pay” for the ability to listen to music by listening to ads.<sup>99</sup> But that again falls far short of establishing a similar WTP for advertising-supported non-interactive and subscription interactive services. Nor does the fact that there is a *non-zero* cross-elasticity of demand between advertising-supported statutory services and subscription interactive services establish a

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those rates are used as the benchmark, column (2) of this figure shows that a proper application of the Spotify benchmark using the *Web IV* methodology applied to all subscription plans results in a statutory rate of \$0.0015 *without* applying any effective competition adjustment. For the reasons described above, however, the Spotify royalty rate does not reflect the forces of effective competition.

<sup>97</sup> Orszag WDT at ¶88.

<sup>98</sup> *Web IV* at 26349 (“Given that the Judges have dichotomized between the subscription and the ad-supported (free-to-the listener) markets, the Judges do not believe that there are any significant uncertainties regarding the approximate equivalence of the elasticities between the interactive and noninteractive upstream markets for the right to acquire licenses to play sound recordings for subscribers. As Dr. Rubinfeld testified, when the downstream subscription market is competitive, the ‘Hicks/Marshall relationship’ provides that if the elasticities in the downstream market are the same then, *ceteris paribus*, pursuant to the Lerner Equation the mark-up of price over cost will be the same in both the upstream and downstream subscription markets, thereby supporting Dr. Rubinfeld’s ‘ratio equivalency’ in the subscription market.”)

<sup>99</sup> Orszag WDT at ¶90.

sufficiently *similar* WTP between these two different types of services to recommend the use of rates paid by subscription interactive services as a benchmark to set the statutory rate for advertising-supported non-interactive services.

Regarding cross-elasticity, Mr. Orszag does not claim or even attempt to show similar demand elasticities as between subscription interactive vs. advertising-supported statutory services. Mr. Orszag claims he “avoids the flaw” in Professor Rubinfeld’s analysis in *Web IV* by using the revenues earned by advertising-supported services in the target market.<sup>100</sup> However, advertising revenues reflect the willingness to pay of advertisers, which depends indirectly on the elasticity of listener hours on advertising supported services to additional advertising. Mr. Orszag has made no attempt to show that there is any relationship between the demand elasticity for subscribers of interactive services and the demand elasticity of advertisers on advertising-supported services. In short, he has *not* avoided the flaw in the Rubinfeld *Web IV* analysis. Nor has he provided an adequate basis for assuming that ratio equivalency would hold.

In fact, one of the exhibits cited in the Willig CWDT shows that the gap between the willingness-to-pay of subscribers to premium services and non-subscribers has not declined as subscription services have grown. The Annual Music Study conducted for RIAA by MusicWatch surveyed non-users of subscription streaming services. Asked what would motivate them to subscribe, [REDACTED] said, “[REDACTED]”<sup>101</sup> The study notes that this figure had increased from [REDACTED] the previous year (a year during which the penetration rate for subscription streaming services increased from [REDACTED] to [REDACTED] and concludes that “[REDACTED]”<sup>102</sup> In other words, there does not appear to be any shift in the resistance of non-payers to paying for music, and the growth in subscription streaming services is due to higher adoption among the group of consumers who *are* willing to pay for music. Today’s users who have (still) not subscribed continue to demonstrate their low WTP for music.

Mr. Orszag points to survey evidence about the percentage of people who either have switched from non-interactive services to interactive services, or said they would do so if webcasting were no longer available. For example, Mr. Orszag refers to the Zauberman survey that Professor Willig uses to measure diversion ratios as indicating that some users of Pandora’s advertising-supported service would switch to new interactive subscriptions if advertising-supported webcasting were no longer available. But Mr. Orszag incorrectly calculates the diversion percentage. Figure 6 in the Willig CWDT shows a diversion rate of [REDACTED] not the 14% rate stated by Mr. Orszag.<sup>103</sup> The [REDACTED] diversion rate is more consistent with the conclusion of the MusicWatch study just discussed, namely that people willing to pay for music are moving down the subscription interactive service adoption curve without reducing the gap between those consumers who are willing to pay for music and those who are not.

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<sup>100</sup> Orszag WDT at ¶91.

<sup>101</sup> SoundExchange Exhibit 42 at slide 54.

<sup>102</sup> SoundExchange Exhibit 42 at slide 18, 54. The survey also reported the results [REDACTED]

[REDACTED] SoundExchange Exhibit 42 at slide 58.

<sup>103</sup> Compare Orszag WDT at ¶94 with Willig CWDT at Figure 6.



Mr. Orszag also points to several internal surveys of listeners who stopped using Pandora's advertising-supported service, [REDACTED]. All but one of the cited surveys do not distinguish between customers who migrate to *subscription* on-demand services and those who migrate to *advertising-supported* on-demand services. And the survey that does distinguish between paid and free on-demand services indicates that [REDACTED]

[REDACTED] Again, Mr. Orszag has not demonstrated that there is sufficient diversion from advertising-supported non-interactive webcasting to subscription interactive streaming to justify applying ratio equivalency.

Mr. Orszag simply has not given any valid reason to conclude that Judges' rejection in *Web IV* of the use of "ratio equivalency" between subscription interactive services and advertising-supported statutory services does not still apply in this proceeding. His claim that he has corrected Professor Rubinfeld's application of "ratio equivalency" to the advertising-supported market in *Web IV* by using the percentage-of-revenue paid in the benchmark market rather than the effective per-performance rate in that market fails because he does not respond to the Judges' fundamental criticisms regarding willingness-to-pay and cross-elasticity of demand.<sup>105</sup> In *Web IV*, the Judges explicitly *rejected* the assumption that the percentage-of-revenue royalty rates charged to subscription interactive services can be used as benchmarks for advertising-supported statutory services.<sup>106</sup> That conclusion remains true today.<sup>107</sup>

## **2. Mr. Orszag Uses the Rates Paid by Subscription Interactive Services as a Benchmark, Rather Than the More Apt Rates Paid by Advertising-Supported Interactive Services**

Mr. Orszag studiously avoids using, or even discussing, a benchmark that is much closer to the target market: the royalty rates paid by *advertising-supported* interactive services. This benchmark has a major advantage over the one used by Mr. Orszag: both the benchmark market

<sup>104</sup> SoundExchange Exhibit 059 at PANWEBV\_00003450.

<sup>105</sup> Mr. Orszag does not take issue with the approach taken by the Judges in the *Web IV* Determination. *See* Orszag WDT at ¶91. ("This is not to say that the Judges erred in *Web IV*.")

<sup>106</sup> *Web IV* at 26346 ("Thus, it is not reasonable to conclude that the ratio of subscription rates to royalties in the interactive market is relevant to the opportunity cost to a record company of listeners who opt instead for ad-supported noninteractive listening. Rather, ad-supported (free-to-the-listener) internet webcasting appeals to a different segment of the market, compared to subscription internet webcasting, and therefore the two products differentiated by this attribute ("ads and free" vs. "no ads and subscription fee") cannot be compared to perform a 1:1 measure of opportunity costs as is the case in Dr. Rubinfeld's "ratio equivalency" model.")

<sup>107</sup> While I have concluded that there is no validity to the methodology that Mr. Orszag uses to derive his proposed \$0.0025 per-performance rate for advertising-supported services, I note that this rate is also incorrect because it omits the same necessary adjustments discussed above for subscription services. While the limited interactivity adjustment applies to the advertising-supported service (because Pandora offers "Premium Access" and other non-statutory performances that increase its revenue per performance on the service; *see* Shapiro CWDt at 6) that adjustment would likely be minimal. The other two adjustments, for skips and for effective competition, would apply to the advertising-supported service benchmark just as they do to the subscription service benchmark. Making these adjustments would lower Mr. Orszag's proposed rate from \$0.0025 per performance to [REDACTED] per performance ([REDACTED]).



and the target market involve advertising-supported services. As the Judges pointed out in *Web IV*, neither set of users has shown a willingness to pay for music services.<sup>108</sup> My CWDT appropriately used royalty rates paid by advertising-supported interactive services as a benchmark for royalty rates for advertising-supported statutory services. Mr. Orszag's failure to use or even consider this benchmark is a glaring omission in his WDT.

***a. Royalty Rates for Advertising-Supported Interactive Services***

My CWDT demonstrated that the effective royalty rate paid by advertising supported interactive services is [REDACTED] per performance.<sup>109</sup> The Willig CWDT reports [REDACTED] paid by Spotify for its advertising supported interactive service, [REDACTED] per performance.<sup>110</sup>

In other words, SoundExchange is proposing a rate for advertising-supported statutory services that is nearly [REDACTED] than the market rate paid by *interactive* services that offer much broader and more valuable functionality.

There is no dispute that an interactivity adjustment is required when using on-demand rates for benchmarking purposes. The Judges used a 2:1 adjustment in *Web IV*.<sup>111</sup> Applying a 2:1 adjustment to the [REDACTED] per-performance rate paid by advertising-supported interactive services yields a proposed rate of [REDACTED] per performance for advertising-supported statutory services, [REDACTED] of the \$0.0025 rate that Mr. Orszag calculates.<sup>112</sup>

Mr. Orszag is silent about this very large discrepancy.

***b. Promotional (Upsell) Effects of Advertising-Supported Interactive Services***

While Mr. Orszag does not explain why he chose to ignore the rates paid by advertising-supported interactive services as a benchmark for advertising-supported statutory services, several record company executives have testified that they consider Spotify to be uniquely promotional among advertising-supported services and that, as a consequence, record companies

[REDACTED] These executives emphasized [REDACTED]

[REDACTED]<sup>113</sup>

<sup>108</sup> *Web IV* Determination at 26345.

<sup>109</sup> Shapiro CWDT at Table 8, Appendix D at 1-2.

<sup>110</sup> Willig CWDT at Exhibit D.2. Willig CWDT at Exhibit D.2. Much of the difference between the advertising supported effective rate calculations is attributed to two adjustments made in the Shapiro CWDT that increase the Spotify per-performance rate: taking account of an end of year "true-up" of royalties, and accounting for grants of marketing considerations. Shapiro CWDT at Appendix D, p. 1.

<sup>111</sup> Orszag WDT at ¶79. *Web IV* Determination at 26338.

<sup>112</sup> Orszag WDT at ¶99.

<sup>113</sup> Harrison WDT at ¶23; Adadevoh WDT at ¶21; Piibe WDT at ¶57.

Table 8 in the Shapiro CWDT, however, shows that [REDACTED] paid an effective rate of [REDACTED] per performance for their advertising-supported interactive services during the May 2018 to April 2019 time period. If the Spotify rate were to be set aside because of record company executives' testimony that Spotify has unique promotional capabilities, and the [REDACTED] rate were used instead, that would [REDACTED] in the benchmarking exercise.<sup>114</sup>

[REDACTED]

We can repeat this exercise for [REDACTED]. Exhibit D.2 from the Willig CWDT shows that [REDACTED] that Orszag reports according to Exhibits D.1 and D.2 of the Willig CWDT.<sup>116</sup>

The data from [REDACTED] rate shown in Table 8 of the Shapiro CWDT (and in Exhibit D.2 of the Willig CWDT) requires a significant adjustment [REDACTED]

If the Judges nonetheless were to accept that the Spotify free-tier rate reflects Spotify's particular success in converting listeners, the proper response is not to throw out that benchmark altogether and revert to the subscription tier rates (for all the reasons established in *Web IV* and discussed above). Rather, the proper response would be to adjust the Spotify free-tier rates accordingly.<sup>117</sup>

The Spotify licenses with the [REDACTED] provide one way to do just that. Specifically, Spotify pays [REDACTED]

<sup>114</sup> The [REDACTED] rate also would not be affected by any additional buyer power that [REDACTED] might have.

<sup>115</sup> Likewise, Exhibits D.1 and D.2 from the Willig CWDT show that [REDACTED]

<sup>116</sup> Professor Willig also reports royalty numbers for Vevo. However, Vevo is a music video service, rather than a music streaming service. Moreover, the majority owner of Vevo is Universal Music Group, with Sony Music as a co-owner. Hence the rates for Vevo do not reflect an arms-length negotiation between a willing buyer and a willing seller. See Rhian Jones, "Vevo revenues rise 30% to hit \$650M in 2017, profitability forecast in 2018," *Music Business Worldwide* (January 2, 2018), available at <https://www.musicbusinessworldwide.com/vevo-revenues-rise-30-hit-650m-2017-forecasts-profitability-2018/>.

<sup>117</sup> If one were to make an *upward* adjustment based on differences in the promotional value of Spotify's free tier relative to the free tier of statutory services, then logically one would also make a corresponding *downward* adjustment to the rate paid by Spotify on its subscription service when using that rate as a benchmark, to reflect [REDACTED]



<sup>118</sup> Ms. Adadevoh testified: [REDACTED]

<sup>119</sup> Likewise, Mr. Harrison testified: [REDACTED]

<sup>120</sup> [REDACTED]

<sup>121</sup> [REDACTED]

<sup>122</sup> [REDACTED]

If the Judges elect to make some upward adjustment to the rates paid by advertising-supported interactive services, they could use [REDACTED]

Applying a [REDACTED] upward adjustment would raise the rate calculated in the Shapiro CWDT for advertising-supported statutory services using the benchmarking methodology from \$0.0006 per performance to [REDACTED] per performance.

### *c. Promotional Effects of Advertising-Supported Statutory Services*

This subsection further explores the role of advertising-supported statutory services in promoting subscription interactive services. Given that most webcasters with an advertising-supported service also have one or more subscription tiers, and given that users who have been listening to a free interactive service for two years may be relatively unlikely to upgrade to a paid interactive service, the [REDACTED] appears to be reasonable, although perhaps too large.

Any upward adjustment of this type should be based on advertising-supported interactive services having *greater* promotional impact than advertising-supported statutory services. For that purpose, i.e., measuring *relative* promotional impacts during the 2021-2025 time period, it is important to understand how advertising-supported statutory services are likely to serve as a gateway to subscription interactive services over that time period. Fortunately, one of SoundExchange's own witnesses, Professor Catherine Tucker, addresses just this issue in her WDT. She describes how non-interactive services are becoming increasingly promotional of subscription revenues. Her testimony addresses the relevant 2021-2025 time frame.

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<sup>118</sup> [REDACTED] has no comparable upcharge for long-time users of Spotify's advertising-supported service.

<sup>119</sup> Adadevoh WDT at ¶21.

<sup>120</sup> Harrison WDT at ¶24.

<sup>121</sup> Harrison WDT at ¶24.

<sup>122</sup> Adadevoh WDT at ¶21.

Specifically, the Tucker WDT contains a lengthy discussion of the ways in which non-interactive webcasting services, and especially Pandora and iHeart, have invested in new technologies and practices that enable precise customer targeting, increase engagement, and ultimately, drive additional revenues. One important aspect of these innovations is that they will enable webcasters like Pandora and iHeart to better funnel customers from their non-interactive services to higher revenue subscription offerings during the relevant 2021-2025 period.

Funneling free and mid-tier users to a premium subscription service benefits record companies as well as webcasters, because the record companies receive additional royalties when users subscribe to premium services. As free and mid-tier webcasting services increasingly become a vehicle for funneling customers into more lucrative premium services, those investments would factor into hypothetical negotiations between webcasters and record companies.<sup>123</sup>

The willing buyer/willing seller standard governing this proceeding explicitly states that the statutory rate should reflect the impact of a service on other sources of copyright holder revenues, i.e., “whether use of the service may substitute for or may promote the sales of phonorecords or otherwise may interfere with or may enhance the sound recording copyright owner’s other streams of revenue from the copyright owner’s sound recordings.”<sup>124</sup> The evidence offered by SoundExchange in this proceeding demonstrates that webcasting services promote additional royalties for copyright holders and that they will become increasingly promotional in the years ahead as they continue to refine and improve their services.

The value of webcasting services in promoting additional copyright holder revenues is relevant in this proceeding for at least two reasons. First, the fact that webcasting services are more promotional now than they were in *Web IV* implies that there should be a *downward* adjustment in rates, since copyright holders increasingly benefit from the promotional (upsell) value of webcasting services. As described by Professor Tucker:

Since *Web IV*, noninteractive webcasters such as Pandora have introduced premium tiers of service, and have adopted strategies to funnel consumers to those tiers. The array of digital tools and knowledge surrounding how firms can persuade their user base to upgrade to subscription services represents a large shift from *Web IV* to *Web V*.<sup>125</sup>

This promotional role of webcasting services justifies *lowering* the statutory rates paid by webcasting services from *Web IV* rates, not raising them as proposed by SoundExchange.

Second, the Tucker WDT describes a number of ways that webcasting services like Pandora and iHeart are becoming *more* promotional over time. That is relevant for assessing the extent that any adjustment for promotion is needed for the 2021-2025 period covered by this proceeding.

Statutory services, according to Professor Tucker, are investing in tracking usage patterns for individual advertising-supported customers. Not only does this allow the services to optimize their offerings for those customers (both for the benefit of customers and to increase advertising revenues) but “firms also can optimize the potential upgrade path and increase the probability

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<sup>123</sup> See Tucker WDT at ¶82.

<sup>124</sup> 17 U.S.C §114(f)(1)(B)(i).

<sup>125</sup> Tucker WDT at ¶73.



that individual consumers can be ‘upsold’ to premium services.”<sup>126</sup> As Professor Tucker notes, these types of prompts to upgrade are critical for converting users of “freemium” services into paying customers.<sup>127</sup> Among the data-driven personalization features being introduced are crowd-sourced suggestions that use the behavior of similar customers, not just song characteristics, to prioritize song choices.<sup>128</sup>

Professor Tucker notes that with the rising popularity of interactive services, providers of non-interactive services have introduced premium offerings and are placing increased focus on encouraging users to upgrade to premium (in part to forestall customers migrating to other interactive services).<sup>129</sup> This benefits both the services and record companies, as the services improve their ability “to use ad-supported services as a means of ‘funneling’ consumers to more profitable subscription on-demand offerings.”<sup>130</sup> Professor Tucker explicitly notes that this focus on funneling consumers will “influence how these firms do business over the next five years.”<sup>131</sup>

Professor Tucker cites academic literature showing that firms benefit by experimenting over time to develop effective upgrade messages, and that the likelihood of upgrade increases with innovations in their premium tier service.<sup>132</sup> Both of these factors imply that services like Pandora and iHeart will become increasingly effective at upgrading customers as they refine their offerings and marketing messages.

One specific marketing strategy described by Professor Tucker to increase the probability of upgrades is to offer free trials on the premium service. As she notes, established subscription services like Spotify and Apple Music successfully use free trials, and Pandora has imitated these other services by offering free premium trials. Pandora has also developed strategies that allow users of its free service to sample its premium service. In particular, Pandora’s Premium Access allows users to enjoy premium functionality (such as the option to select a particular recording to listen to next) after being exposed to additional advertising. Professor Tucker refers to the Sony-Pandora agreement that

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All of the innovations in product and marketing discussed so far focus on providers of non-interactive services upgrading users from their free service to their own premium service. But more generally, free services can serve as a gateway that funnels customers into premium services, even if the customer chooses to churn to a *different* premium service. From the perspective of the non-interactive service, this churn to rival premium services results in a loss in revenue. From the perspective of the record companies, however, it does not matter whether a

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<sup>126</sup> Tucker WDT at ¶28.

<sup>127</sup> Tucker WDT at ¶29.

<sup>128</sup> Tucker WDT at ¶41.

<sup>129</sup> Tucker WDT at ¶53.

<sup>130</sup> *Id.*

<sup>131</sup> Tucker WDT at ¶62.

<sup>132</sup> Tucker WDT at ¶64.

<sup>133</sup> Tucker WDT at ¶70.



customer switches service providers when upgrading from a free service to a subscription premium service; the royalties flowing from that customer to record companies and artists increase, regardless of which premium service the customer chooses. Professor Tucker cites data that [REDACTED]

[REDACTED] to the benefit of record companies.<sup>134</sup> The same data source indicates that another [REDACTED]<sup>135</sup>

Therefore, even if more users upgrade from Spotify free to Spotify premium than from Pandora free to Pandora Premium, that is not the relevant measure for assessing the relative promotion benefits to record companies from different free services. What matters for benchmarking purposes is the total amount of upgrading to premium services associated with different types of free services, and how *that* compares with, say, Spotify's free service.

### **III. The Flaws in Professor Willig's Analysis Cause Him to Significantly Overstate the Rates That Would Result from Negotiations Between a Willing Buyer and a Willing Seller in an Effectively Competitive Market**

In this section, I respond to the Willig CWDT and specifically the rates proposed by Professor Willig, which are based on a Nash-in-Nash bargaining model and a Shapley Value model.

Section III.A explains why the inputs used by Professor Willig in his models require correction. Section III.B addresses Professor Willig's unfounded assumption that the major record companies are "must-have" for statutory webcasters. By making this assumption Professor Willig has hard-wired into his models complementary oligopoly power. Professor Willig's "must-have" assumption must be dropped, because it is contradicted by the evidence and because it is inconsistent with effective competition. Section III.C explains why the Nash-in-Nash bargaining model is superior here to Shapley Value, and why, if cooperative game theory methods are to be used at all, Myerson Value, a Shapley variant and refinement, is required here instead of Shapley Value.

Section III.D shows how making these necessary corrections causes the statutory rates implied by Professor Willig's bargaining models to be far lower than the rates he proposes. Using his Nash-in-Nash bargaining model, his derived rate of [REDACTED] per performance for advertising-supported webcasters becomes [REDACTED] per performance, and his derived rate of [REDACTED] per performance for subscription webcasters becomes [REDACTED] per performance. See Figure 13. Using his Shapley Value model, his derived rate of [REDACTED] per performance for advertising-supported webcasters becomes \$0.00114 per performance, and his derived rate of [REDACTED] per performance for subscription webcasters becomes [REDACTED] per performance. See Figure 15.

#### ***A. The Inputs Used by Professor Willig in His Bargaining Models Require Correction***

The Willig CWDT uses two types of bargaining models to calculate proposed statutory rates: a Shapley Value model and a Nash-in-Nash Bargaining model.

<sup>134</sup> Tucker WDT at ¶71.

<sup>135</sup> SoundExchange Exhibit 58 at PANWEBV 00003407. *See also* Orszag WDT at ¶93, citing SoundExchange Exhibit 64 [REDACTED]

Both of these models require two basic inputs: (1) webcaster price/cost margins, and (2) the opportunity cost to a record company of licensing to webcasters. Professor Willig calculates these inputs separately for subscription webcasters and for advertising-supported webcasters.

Professor Willig estimates webcaster margins during 2021-2025 of \$0.0048 per performance for subscription webcasters and \$0.0042 per performance for advertising-supported webcasters.<sup>136</sup>

Professor Willig estimates a record industry opportunity cost of [REDACTED] per performance for licensing to subscription webcasters and of [REDACTED] for licensing to advertising-supported webcasters.<sup>137</sup>

Putting these inputs into his Shapley Value model, and assuming that the major record companies are “must-have” for statutory webcasters, Professor Willig generates royalty rates of [REDACTED] per performance for subscription webcasters and [REDACTED] per performance for advertising-supported webcasters.<sup>138</sup>

Putting these same inputs into his Nash-in-Nash Bargaining model, and again assuming that the major record companies are “must-have” for statutory webcasters, Professor Willig generates royalty rates of [REDACTED] per performance for subscription webcasters and [REDACTED] per performance for advertising-supported webcasters.<sup>139</sup>

In this section, I identify a number of errors in the Willig CWDT that cause him to overestimate webcaster margins and record industry opportunity costs. Section III.D shows how these errors inflate the royalty rates proposed by Professor Willig.

### **1. Professor Willig Overstates Webcaster Margins**

Both Professor Willig and I estimate the margin of a webcaster offering a subscription service and the margin of a webcaster offering an advertising-supported service. We estimate these margins before deducting the royalties paid for recorded music. We both use Pandora as the representative webcaster and rely on financial documents prepared by Pandora in the ordinary course of business. The Willig CWDT relies on scenarios contained in Merger Proxy documents from Pandora, which were prepared in advance of its acquisition by Sirius XM. My CWDT relies on Pandora’s Long Range Scenario (LRS), which I understand is a financial planning format that has historically been used by Sirius XM’s upper management to inform their business decisions and is now used by Pandora’s management as well. Contrary to the claim in the Willig CWDT, the LRS model was not prepared “for these proceedings.”<sup>140</sup>

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<sup>136</sup> Willig CWDT, Figure 8, p. 26.

<sup>137</sup> Willig CWDT, Figure 9, p. 27.

<sup>138</sup> Willig CWDT, Figure 9, p. 27. Professor Willig provides an alternative Shapley Value calculation using the Share of Ear data, which gives royalty rates of [REDACTED] per performance for subscription webcasters and [REDACTED] per performance for advertising-supported webcasters. Willig CWDT Figure 10, p.33.

<sup>139</sup> Willig CWDT, Figure 11, p. 36.

<sup>140</sup> Willig CWDT Appendix D at n.3, fn. 4. See Ryan WRT, Section VI (discussing LRS).

The Willig CWDT calculates margins based on *forecasted* revenues and costs, whereas my CWDT calculates margins based on Pandora's *actual* financial results from 2018.<sup>141</sup> While there is nothing inherently wrong with using forecasts, one must be careful doing so because they depend on varied assumptions about the future, and there may be multiple forecasts from which to choose. The Judges have expressed reservations about using forecasts for this very reason, stating in *SDARS III*: "As the Judges have stated previously, they are less than sanguine about projections and forecasts given the inherent speculative nature of such a process."<sup>142</sup>

In this case, we have three available forecasts: two from scenarios included in Pandora's Merger Proxy documents (created in 2017 and revised in 2018) and one from Pandora's LRS (just recently created). These three forecasts are based on different underlying assumptions and give different estimated margins. As explained by Jason Ryan in his Written Rebuttal Testimony (the "Ryan WRT"), the forecasts included in the LRS model are a more reliable estimate of Pandora's future financial performance, because, among other things (a) they were produced more recently, (b) they reflect important business developments since the Merger Proxy Statement was issued (including a material downturn in Pandora's subscriber and monthly average user counts), and (c) they incorporate changes in Pandora's financial performance and projections associated with its acquisition by Sirius XM.<sup>143</sup>

Furthermore, the forecasted revenues and costs from the Merger Proxy document used by Professor Willig do not include the level of detail necessary to properly calculate margins for Pandora's subscription and advertising-supported services; such detail was available both in the financial models underlying the Merger Scenarios, as well as in the LRS. Due to the lack of details in the Merger Proxy document he relied upon, Professor Willig made several incorrect assumptions regarding the allocation of revenue between Pandora's advertising-supported service, its subscription services, and its third-party ad services businesses. He also made certain errors in allocating variable costs between Pandora's subscription and advertising-supported services, and in the treatment of fixed vs. variable costs. The documents upon which I rely here provide a more detailed and accurate measure of those aspects of Pandora's finances.

#### ***a. Professor Willig Overstates Webcaster Margins***

As a first step, I have corrected Professor Willig's margin estimates. As explained in more detail in Appendix C, these corrections address the following errors in the Willig CWDT:

- My analysis uses Pandora's actual assumptions on listening hours, subscribers, and other key drivers of revenue and cost that were used in the Merger Proxy forecasts, rather than imputing values for those parameters.

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<sup>141</sup> This difference carries several implications. If one is using forecasted margins, one should also use forecasts for the other inputs into the model, including opportunity costs. Professor Willig does not do so. As a result, if the effective per-play rates for CDs and for subscription interactive services are expected to continue to decline, as various SoundExchange witnesses testify, Professor Willig would for this reason overestimate negotiated royalty rates by selectively using forecasted and current-year inputs. In addition, if the Judges choose to use forecasted margins, which build in assumptions of inflation, they should not *also* apply an inflation adjustment to the rates calculated based on those forecasted margins.

<sup>142</sup> *SDARS III Determination* at 65257, n. 181.

<sup>143</sup> Ryan WRT at Section VI.

- My analysis distinguishes between advertising revenues associated with Pandora’s music streaming and other advertising-related revenues earned by Pandora, such as from providing wholesale advertising services to other webcasters.
- My analysis ascribes costs to the correct Pandora service tier, rather than ascribing costs to the incorrect service tier (for example, by allocating some costs associated with advertising sales to the Pandora subscription services, and some subscription commissions to Pandora’s advertising-supported service).
- My analysis correctly categorizes costs as fixed or variable—a vital distinction when calculating margins on additional performances.

Figure 6 shows the results of these corrections for Pandora’s subscription service.

The first column in Figure 6 shows the margins reported in Exhibit D.6 of the Willig CWDT, relying on Merger Proxy Scenario 2. The second and third columns continue to rely on the Merger Proxy scenarios, but correct those margins using the more detailed financial models underlying those scenarios, as described in Appendix C. As a robustness check, the third column shows margins calculated in this same manner for Scenario 1A from Pandora’s Merger Proxy documents (whereas Professor Willig relies on Scenario 2).<sup>144</sup> Lastly, the fourth column shows the margins calculated using the forecasts included in Pandora’s LRS instead of the Merger Proxy documents. Note that all of these margins are calculated *before* deducting the royalties paid for recorded music. Note also that the LRS forecast covers the 2021-2024 time period, while the Willig CWDT calculation covers the 2021-2025 time period.

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<sup>144</sup> Scenario 2 projects more growth in the number of subscribers and in the number of advertising-supported listening hours than does Scenario 1A. The two scenarios nonetheless project very similar margins.





Figure 6 demonstrates that regardless of whether one simply corrects Professor Willig's calculations based on the Merger Proxy documents, or instead relies on the Pandora LRS, Professor Willig's measure of the per-performance margin at Pandora Plus is significantly overstated.

Making the necessary corrections, the projected margin for Pandora Plus over the 2021-2025 time period under Merger Proxy Scenario 2 is [REDACTED] per performance, not the [REDACTED] per performance reported in the Willig CWDT. His figure of [REDACTED] per performance is about 30 percent higher than the corrected rate using the same forecast. If one relies on the Pandora LRS, as is preferable, one obtains a margin of [REDACTED] per performance.<sup>145</sup> In Section III.D, I use this margin to calculate the corrected royalty rates generated by Professor Willig's models.

As explained in more detail in Appendix C, Professor Willig significantly overestimates Pandora Plus revenue by attributing to Pandora Plus some of the revenue generated, according to

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<sup>145</sup> The 2021-2024 forecasted margins using the LRS are somewhat higher than the actual 2018 per-performance margins based on the LRS that are used in my CWDT [REDACTED] for Pandora Plus and [REDACTED] for the advertising-supported service). See Appendix C for further details; *see* Shapiro CWDT at Table A.2 and Table A.3 for 2018 margin information.

Pandora's Scenario 2 projections, by Pandora Premium. This error drives the higher marginal profit per performance calculated in the Willig CWDT.

Figure 7 repeats this exercise for Pandora's advertising-supported service.



Again, we see that Professor Willig has significantly overstated Pandora's marginal profit per performance. The correct pre-royalty margin for Pandora's advertising-supported service over the 2021-2025 time period based on Merger Proxy Scenario 2 is [REDACTED] per performance, not the [REDACTED] per performance reported in the Willig CWDT.<sup>146</sup> His estimate is fully [REDACTED] higher than the correctly calculated per-performance margin using the same forecast. If one relies on the Pandora LRS, as is preferable, one obtains a margin of [REDACTED] per performance. In Section III.D, I use this margin to calculate the corrected royalty rates generated by Professor Willig's models.

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<sup>146</sup> Again, Merger Proxy Scenario 1A gives very similar figures to Merger Proxy Scenario 2.

As explained more in detail in Appendix C, Professor Willig overestimates Pandora's advertising revenue by including in his analysis revenue not generated by Pandora's advertising-supported service, as well as revenue generated by non-music content. Furthermore, Professor Willig underestimates costs by incorrectly classifying certain variable costs (such as Sales & Sales Operations) as fixed which he then does not subtract from advertising revenue when calculating the margin. These errors cause Professor Willig to significantly overestimate Pandora's marginal profit per performance on its advertising-supported service.

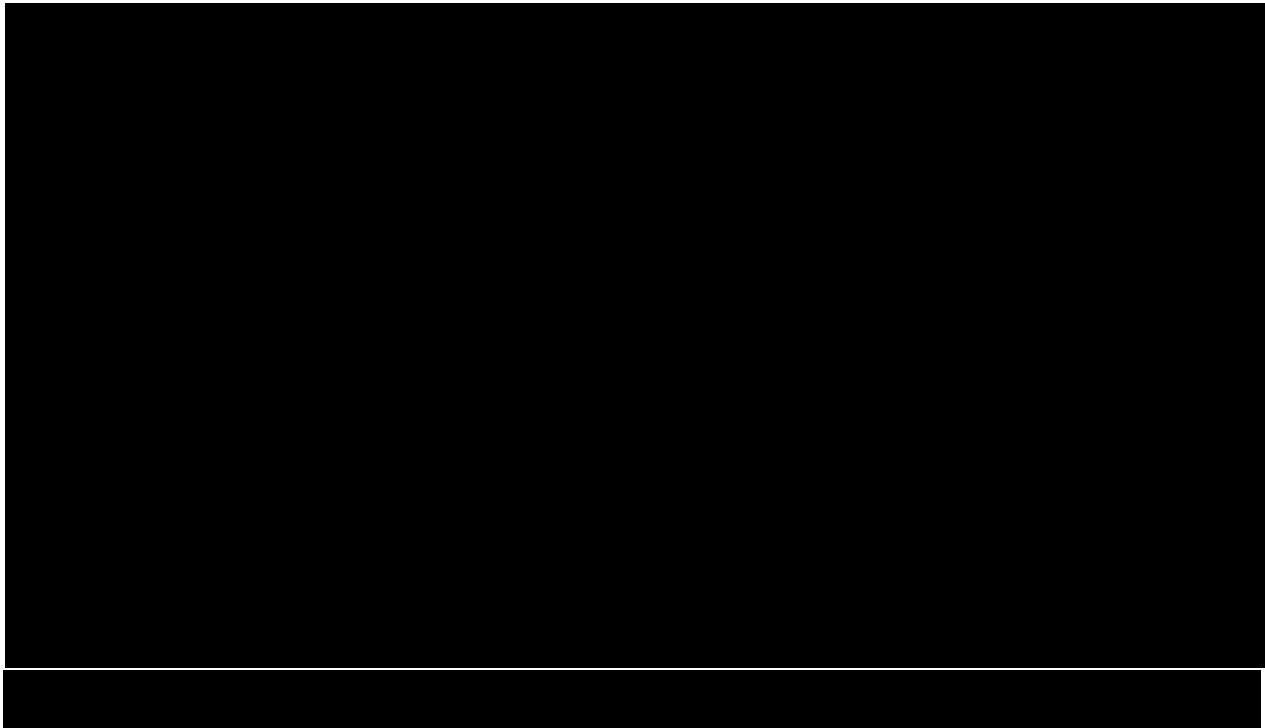
## **2. Professor Willig Overstates the Opportunity Cost for the Record Industry of Licensing to Statutory Webcasters**

Professor Willig also makes several errors that cause him to overestimate another key input into his bargaining models: the opportunity cost to the record industry of licensing to webcasters.

### ***a. Correcting Opportunity-Cost Errors Made by Professor Willig***

Professor Willig made two significant errors relating to the calculation of record industry opportunity cost: (1) he made a calculation error related to the component of opportunity cost associated with CDs, Vinyl and Digital Downloads, and (2) he overestimated the incremental purchases of CDs, Vinyl, and Digital Downloads (as compared to listening to existing copies owned by users) in response to the lack of availability of webcasting. Appendix D discusses these errors in detail and explains how to correct them.

Figure 8 summarizes these corrections. This figure shows how the estimated record industry opportunity cost reported in Figure 6 of the Willig CWDT changes when these two errors (in red type) are corrected. Figure 8 retains (for the moment) Professor Willig's assumption that the three Majors are "must-have" for statutory webcasters. I adjust that in later sections of my analysis.



For advertising-supported webcasters, the per-performance opportunity cost (for a must-have record company) reported in Figure 6 in the Willig CWDT falls from [REDACTED] to [REDACTED].

For subscription webcasters, the per-performance opportunity cost (for a must-have record company) reported in Figure 6 in the Willig CWDT falls from [REDACTED] to [REDACTED].

As shown in the third and fourth columns of Figure 8, these differences are driven by Professor Willig's calculation that users currently spend \$2.01 per month on CDs, Vinyl and Digital Downloads, which is based on (a) an arithmetic error in his weighting of these various formats and (b) a flawed assumption that new purchases in this category are "all or nothing" rather than scaled to listening. See Appendix D for further details.

In Section III.D, I use these corrected estimates of record industry opportunity cost to calculate corrected royalty rates generated by Professor Willig's models.

***b. Correcting Opportunity Cost Based on "Share of Ear" Survey Data***

Professor Willig also considers the "Share of Ear" survey (Q2 2019) as an alternative source for the estimated diversion rates between webcasters and other services. Professor Willig finds that the results obtained using the "Share of Ear" survey are consistent with his results based on the Zauberman survey. However, Professor Willig makes the same error when using the "Share of Ear" data as he does when using the Zauberman data: he does not correctly estimate the number of *new* purchases (as opposed to listening to existing subscriptions or already-owned physical or digital copies) made by consumers in response to the unavailability of statutory webcasting. When he uses the "Share of Ear" data, Professor Willig assumes that diversion of listening hours to a subscription service always entails a *new* subscription, and diversion to listening to CDs, Vinyl, and Digital Downloads always entails *new* purchases of these media. These assumptions are unjustified and significantly inflate his measure of opportunity cost.



The “Share of Ear” survey reports the share of listening time accounted for by various services, including webcasting, on-demand streaming, terrestrial radio, and satellite radio. It also includes more detailed data regarding the share of listening associated with various streaming services such as Pandora, Spotify, and iHeart. Professor Willig uses these data, as well as data on the performance count for different tiers of each service, to calculate the total share of listening time for each tier of service. More specifically, he uses “a logit demand model to estimate diversions based on shares, under the assumption that if either the ad-supported or subscription noninteractive distributors were to lose access to sound recordings, users would divert their noninteractive plays to other distributors in a way that is proportional to these distributors’ current shares of listening time.”<sup>147</sup>

The “logit demand” assumption is commonly used by economists to calculate diversions when no better data are available. In this case, however, using the logit demand assumption without an adjustment is inappropriate, because doing so implicitly assumes that every play diverted from a webcaster to a subscription service is to a *new* subscription. This is an incorrect assumption, as demonstrated by the results of the Hanssens survey, which shows that approximately [REDACTED] of the diversion from an advertising-supported webcaster to a subscription interactive service would be toward *existing* subscriptions.<sup>148</sup> Likewise, using the logit demand assumption without an adjustment implicitly assumes that diversion to CDs, Vinyl, and Digital Downloads always involves *new* purchases. This is also an incorrect assumption. The Hanssens survey shows that only about [REDACTED] of the diversion from an advertising-supported webcaster to CDs, Vinyl, and Digital Downloads are to new purchases; the rest are already owned or borrowed.<sup>149</sup>

I have used the results from the Hanssens survey regarding the relative proportions of new vs. existing subscriptions and new vs. existing CDs, Vinyl, and Digital Downloads to recalculate the diversion rates used by Professor Willig based on the “Share of Ear” data. This calculation indicates that the record industry opportunity cost of licensing to advertising-supported webcasters is about [REDACTED] per performance, and that the record industry opportunity cost of licensing to subscription webcasters is about [REDACTED] per performance. These estimates of opportunity cost are far less than the estimates used in the Willig CWDT based on the “Share of Ear” survey, which are [REDACTED] and [REDACTED] per-performance, respectively.<sup>150</sup> See Appendix D for details.

### 3. Professor Willig Uses Faulty Equations

Professor Willig makes several errors in the equations that he uses to implement his Shapley Value and Nash-in-Nash Bargaining models. These errors arise in the expressions used for the opportunity cost to a record company of licensing its music to webcasters. These errors arise for record companies that are not “must-have” for statutory webcasters. They errors become

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<sup>147</sup> Willig CWDT, Appendix F at ¶16. See also Figure F-5 in the Willig CWDT.

<sup>148</sup> Shapiro CWDT, Table 2.

<sup>149</sup> Shapiro CWDT, Table 2.

<sup>150</sup> Willig CWDT, Figure 10. These figures are also far less than the corresponding record industry opportunity costs estimated in the Willig CWDT based on the Zauberman survey, which are [REDACTED] per performance and [REDACTED] per performance respectively. Willig CWDT, Figure 9.

significant after one drops Professor Willig’s assumption that the Majors are “must-have.” Appendix E contains additional details about these errors and provides the corrected equations.

***B. Professor Willig’s Unfounded Assumption That the Majors are “Must-Haves” for Webcasters Causes Him to Propose Rates That Improperly Reflect Complementary Oligopoly Power and Significantly Overstate Willing Buyer/Willing Seller Rates***

I now turn to Professor Willig’s core assumption that each of the three major record companies is “must-have” for statutory webcasters. More specifically, he assumes that a statutory webcaster would lose all of its music listening hours if it lacked access to the repertoire of either Universal, Sony, or Warner. This assumption permeates the entire Willig CWDT.

For reasons I now explain, Professor Willig’s “must-have” assumption for the three Majors must be modified. That assumption (a) is not adequately justified by Professor Willig and indeed is contradicted by the Label Suppression Experiments described in the Reiley WRT, (b) is in any event inconsistent with effective competition, and (c) causes the rates emerging from Professor Willig’s bargaining models to reflect complementary oligopoly power for the Majors, even though there is no evidentiary or economic policy reason to do so.

**1. The Majors Are Not “Must-Have” for Statutory Webcasters**

Professor Willig does not justify his assumption that each of the three Majors is “must-have” for statutory webcasters, other than to cite to the *Web IV* Determination.

In order to respond to Professor Willig, I requested that Dr. David Reiley report the results from the Pandora Label Suppression Experiments for the six-month period from the start of the experiments on June 4, 2019. The Reiley WRT establishes that Pandora’s advertising-supported service would lose only a small share of its listener hours over a six month period as a result of losing access to the repertoire of one of the major record companies. Below, I provide a reasonable method of projecting this loss of listening hours over a longer period of time. Professor Willig’s “must-have” assumption is inconsistent with this experimental evidence.

**2. Negotiations with “Must-Have” Labels Do Not Reflect Effective Competition**

If the major record companies were “must-have” for statutory services as a factual matter, then the upstream market for the licensing of recorded music to statutory webcasters would not be effectively competitive. Indeed, it would be subject to a complementary oligopoly. As the Judges recognized in the *Web IV* Determination, a complementary oligopoly is inconsistent with effective competition, and can even lead to royalty rates greater than the rates that a monopolist would charge.<sup>151</sup>

Professor Willig does not make any adjustment to his bargaining models to account for the complementary oligopoly power that the three Majors have in those models. Therefore, if the Judges were to adopt Professor Willig’s assumption that the major labels are “must-have” for

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<sup>151</sup> *Web IV* Determination at 26342, 26334 n. 72 (rate proposals should satisfy “the Judges’ requirement that the statutory rate reflect effective competition, rather than the complementary oligopoly power present in the interactive market.”)

statutory webcasters, notwithstanding the contrary evidence from the Pandora Label Suppression Experiments, the royalty rates generated by Professor Willig’s bargaining models would require a suitable downward adjustment to capture the impact of effective competition.

I am aware that in *SDARS III*, the Judges made use of the opportunity cost of “must-have” record companies, based in part on their finding that Sirius XM’s satellite radio service had countervailing market power to the Majors.<sup>152</sup> While I respectfully disagree with that conclusion, for reasons described in my *SDARS III* WRT, the conditions that the Judges cited as supporting that finding—a natural monopoly in the provision of satellite services, limited competitive constraints from other forms of music distribution, and a uniquely differentiated product with strong appeal to, in particular, customers who listen while driving—do not apply to statutory webcasters and cannot be extended to this proceeding. Furthermore, the Judges noted in their *Web IV* Determination that the royalties paid by the largest statutory webcaster, Pandora, accounted for roughly five percent of the revenue earned by the record industry in 2013 for licensing music in the United States.<sup>153</sup> The Judges stated that this small share was “sufficient to contradict the assertion that Pandora exercised undue market power in negotiating the terms of the Pandora/Merlin Agreement.”<sup>154</sup> The share of record industry revenue accounted for by Pandora grew to nine percent in 2018, but that share remains too small to give Pandora significant countervailing market power in its negotiations with the Majors, for reasons similar to those given above relating to Spotify and Apple Music, which account for larger shares of record industry revenue than does Pandora.

### 3. Complementary Oligopoly Power Infects Professor Willig’s Models

In Professor Willig’s bargaining models, each of the three major record companies is treated as “must-have” for statutory webcasters. As a result, his Nash-in-Nash Bargaining model and his Shapley Value model are infected with complementary oligopoly power. More specifically, the rates generated for the three major record companies in his models are actually *greater* than the rates they would receive in his models if they were to form a *cartel* (thus acting like a single monopolist) to jointly negotiate rates with webcasters.

#### a. Nash-in-Nash Bargaining Model

Figure 9 confirms that the three major record companies have complementary oligopoly market power in Professor Willig’s Nash-in-Nash Bargaining model. This is a logical necessity given his assumption that each of these record companies is “must-have” for webcasters. More specifically, in Professor Willig’s Nash-in-Nash Bargaining model, if the three major record companies were permitted to form a cartel and jointly negotiate royalty rates, the resulting rates would actually be *lower* than the ones that Professor Willig calculates.

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<sup>152</sup> *SDARS III* Determination at 65238-9.

<sup>153</sup> *Web IV* Determination at 26371.

<sup>154</sup> *Web IV* Determination at 26371.

The results shown in Figure 9 serve as a stark demonstration that Professor Willig's Nash-in-Nash bargaining model with "must-have" record companies does not in any sense capture the concept of effective competition – and in fact produces higher rates than a single monopolist or effective cartel would negotiate.

To be clear, Figure 9 is not intended to offer an alternative to Professor Willig's proposed rates. In no sense do the lower rates shown in the last column of Figure 9 reflect effective competition: they are monopoly rates, and do not reflect other necessary corrections to Professor Willig's Nash-in-Nash calculations discussed elsewhere in this testimony. Figure 9 is offered solely to show that Professor Willig's Nash-in-Nash bargaining model, with its "must-have" assumption, is infected by the complementary oligopoly power of the three major record companies.

If the Judges were to adopt Professor Willig's unfounded assumption that the major record companies are "must-have" for statutory webcasters, some downward adjustment to the royalty rates generated by his Nash-in-Nash Bargaining model would be needed. Professor Willig makes no such adjustment.

### ***b. Shapley Value Model***

Professor Willig's Shapley Value model also is infected with the complementary oligopoly power of the three Majors.

The way that complementary oligopoly power arises when using the Shapley Value methodology can be illustrated by looking at the patent bargaining game that Professor Willig uses to motivate his Shapley Value model. In that example, a manufacturer (D) needs licenses from each of two patent holders (A and B) to create a new product. In his model, these two patent holders are complementary duopolists. Professor Willig shows that the Shapley Value for the manufacturer in his example is \$4.

Consider a modified version of Professor Willig's example in which the two patent holders are merged into a single entity, AB. The Shapley Value for the manufacturer in this modified version of Professor Willig's example is \$6.<sup>155</sup> This shows that in Professor Willig's example the manufacturer is harmed by the complementary oligopoly power of the two patent holders, paying more than it would pay to a monopolist controlling both patents. Seen from another perspective, in Professor Willig's example a single firm controlling both patents would have a Shapley Value of \$16, less than the combined Shapley Value of \$18 for the two complementary patent holders.

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<sup>155</sup> The incremental contribution of D is 0 when it is first to join the coalition, and  $12=22-10$  when it joins the coalition after AB. The Shapley Value for D is therefore  $\frac{1}{2} (0 + 12) = 6$ .



The complementary oligopoly power of patent holders *A* and *B* increases the royalty payment received by each of them from \$5 to \$6.

Figure 10 confirms that the three major record companies have complementary oligopoly market power in Professor Willig's Shapley Value model, as we saw above with his Nash-in-Nash model. Figure 10 compares the royalty rates generated in the Willig CWDT with the royalty rates that would be generated by the same model, with the same inputs, but with a single entity controlling all of the recorded music licensed by the three major record companies rather than three "must-have" entities. In Professor Willig's Shapley Value model, allowing the three Majors to negotiate as a single monopolistic entity would lead to *lower* royalty rates.



Figure 10 proves that Professor Willig's Shapley Value model is infected by the complementary oligopoly power of the three Majors.

To be clear, Figure 10 is not intended to offer an alternative to Professor Willig's proposed rates. The lower rates shown in the last column of Figure 10 do not reflect effective competition: as noted above, they are monopoly rates, and do not reflect other necessary corrections to Professor Willig's Shapley Value calculations discussed elsewhere in this testimony. Figure 10 is offered solely to show that Professor Willig's Shapley Value model is infected by the complementary oligopoly power of the three major record companies.

If the Judges were to adopt Professor Willig's unfounded assumption that the major record companies are "must-have" for statutory webcasters, some downward adjustment to the royalty rates generated by his Shapley Value model would be needed. Professor Willig makes no such adjustment.

### ***C. Nash-in-Nash Bargaining and Myerson Value Models Are Superior to Professor Willig's Use of Shapley Value for Rate-Setting Here***

I now discuss which bargaining model is best for answering the question before the Judges: the rates that a willing buyer and willing seller would agree to in an effectively competitive market.

Section III.C.1 explains why the Nash-in-Nash Bargaining methodology is superior to Shapley Value for the purpose of determining the statutory royalty rates in this proceeding. Nash-in-Nash Bargaining directly models the bilateral negotiations between record companies and statutory webcasters. Shapley Value does not.

Section III.C.2 explains that Shapley Value is not even the correct cooperative game solution concept to use in the current setting. As recognized in the literature for the past 40 years, there is

a superior methodology, Myerson Value, which corrects for a shortcoming of Shapley Value in certain settings that involve “contracting externalities.” Studying the licensing of recorded music to statutory webcasters under conditions of effective competition requires the use of Myerson Value, not Shapley Value.

Section III.C.2 further shows that using Myerson Value rather than Shapley Value in Professor Willig’s model yields significantly lower royalty rates, once one drops his assumption that each of the three major record companies is “must-have” for statutory webcasters.

### **1. Nash-in-Nash Bargaining is Superior Here to Shapley Value**

We are seeking to estimate the rates that would be reached in bilateral negotiations between willing sellers (record companies) and willing buyers (statutory webcasters) in the absence of a statutory license, under conditions of effective competition. The Nash-in-Nash bargaining model looks directly at these bilateral negotiations. When looking at any one bilateral negotiation, the Nash-in-Nash bargaining methodology takes as given the deals reached by all other buyer/seller pairs. Professor Willig and I agree that the Nash-in-Nash bargaining methodology is sound and well-suited for this proceeding, and both used it in our respective CWDTs.

Shapley Value takes an entirely different approach. As explained by Professor Willig: “This solution divides up the surplus according to each party’s incremental contributions to the total amount of value created. These contributions are assessed as increments to every possible combination of unilateral, bilateral, and multilateral deals that may be struck by the different parties, and then averaged across all such combinations.”<sup>156</sup>

The Shapley Value is derived based on the returns to various *coalitions* and is frequently used to assess the relative contributions of participants to a coalition containing many members. Shapley Value has frequently been used, for example, to model the political power of individual political parties in parliamentary settings where multiple parties must join a majority coalition to claim power.<sup>157</sup>

In the current context, each firm’s Shapley Value is determined by the incremental value that firm brings to all possible coalitions, including many coalitions that are not directly relevant to the bilateral bargaining at issue in this proceeding. For example, the value that Universal contributes to Pandora’s service if Pandora is not able to offer music from Sony or Warner is not directly relevant to negotiations between Universal and Pandora in a setting where it is fully expected that Pandora will sign licenses with all three Majors. More generally, there is no particular reason to believe that the Shapley Value accurately captures the outcome of the relevant bilateral negotiations between one record company and one statutory webcaster. Professor Willig offers no such justification for using Shapley Value in this proceeding.

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<sup>156</sup> Willig CWDT, ¶14 (footnote omitted).

<sup>157</sup> The initial application of the Shapley Value to voting systems was published the following year, by Shapley and Shubik, which spawned a voluminous literature. See Lloyd S. Shapley and Martin Shubik, “A method for evaluating the distribution of power in a committee system,” 48 *The American Political Science Review* 787 (1954); Alvin E. Roth, ed., *The Shapley Value: Essays in honor of Lloyd S. Shapley*, Cambridge University Press (1988) at 8-9.

For all of these reasons, the Nash-in-Nash bargaining methodology is superior to Shapley Value for the purpose of modeling negotiated royalty rates in the current proceeding. Professor Willig does not argue to the contrary.<sup>158</sup>

Professor Willig contends—incorrectly in my view—that the Shapley Value methodology is well suited to this proceeding. In Section III of his CWDT, Professor Willig briefly offers three arguments in favor of using Shapley Value in the current proceeding.

First, Professor Willig states: “In the recent *Phonorecords III* proceeding, the Copyright Royalty Judges credited a Shapley Value analysis as one way of addressing concerns about complementary oligopoly power.”<sup>159</sup> However, that conclusion by the Judges in *Phonorecords III* referred to the specific implementations of Shapley Value by experts in that proceeding, where the Shapley Value model was used for a very different purpose. Those models treated sound recording copyright holders as a single entity (either combined with or separate from a single entity licensing publishing rights). With that assumption, the Shapley Value models used in *Phonorecords III* explicitly avoided complementary oligopoly power among separate copyright holders for each set of rights by removing the oligopoly.<sup>160</sup> Professor Willig does *not* follow that approach to removing complementary oligopoly power among the major record companies in his Shapley Value model. As a result, for the very reasons given by the Judges in *Phonorecords III*, Professor Willig’s model gives additional returns to the major record companies by endowing them with complementary oligopoly power.

Second, Professor Willig states: “Shapley Values incorporate principles of fairness in the allocation of value created by the cooperation of multiple parties.”<sup>161</sup> There are two rather severe problems with invoking fairness to justify the use of Shapley Value in the current proceeding. First, while the 801(b) standard applicable to the *Phonorecords III* proceeding explicitly refers to fairness, the current proceeding operates under a willing buyer/willing seller standard that does not explicitly refer to fairness. Second, Professor Willig provides no reason why Shapley Value is superior to Nash-in-Nash bargaining as regards fairness in the current setting.<sup>162</sup> Indeed, to the

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<sup>158</sup> Professor Willig describes Nash-in-Nash bargaining as “a model of market outcomes without reliance on fairness.” Willig CWDT, ¶61. Below, I compare Shapley Value with Nash-in-Nash bargaining based on fairness.

<sup>159</sup> Willig CWDT at ¶14, citing *Phonorecords III* at 33.

<sup>160</sup> The Judges noted the impact of this modeling assumption with respect to whether sound record and publishing copyright holders are modeled as separate collectives or a single collective, with the complementary oligopoly power of sound recording and publishing rights being removed when they are treated as a single entity. *Phonorecords III* Determination at 1948 (“With regard to the upstream market of copyright holders, Professor Marx utilized two separate approaches. In her self-described ‘baseline’ approach, she ‘treat[ed] rights holders as one upstream entity, reflecting the broad overlap in ownership between publishers and record labels.’ In her ‘alternative’ approach, she uncoupled the two collectivized copyright holders, grouping the songwriters/publishers, on the one hand, and the recording artists/ record companies, on the other. The two purposes of her alternative approach were: (1) To separately allocate surplus and indicate rates for musical works (the subject of this proceeding); and (2) to illuminate the additional ‘bargaining power’ of each category of copyright holder when these two categories of necessary complements arrive separately in the input market under the Shapley methodology.”)

<sup>161</sup> Willig CWDT at ¶16.

<sup>162</sup> Professor Willig lists four “principles of fairness” associated with Shapley Value; Willig CWDT footnote 12. The first of these, “efficiency,” is not about fairness at all. The second, “symmetry,” meaning “equal treatment of equals,” is very reasonable and is also satisfied by both of our Nash-in-Nash bargaining models. The third, “dummy

contrary, Nash-in-Nash bargaining is *superior* to Shapley Value as regards fairness, at least if fairness means that a participant's payoff should be related to the incremental value actually contributed by that participant to the ultimate outcome. Furthermore, unlike Shapley Value, Nash-in-Nash Bargaining captures the negotiation between a willing buyer and a willing seller that is at the heart of the willing buyer/willing seller standard governing this proceeding.

Third, Professor Willig argues that "Shapley Values fit within the requirements of the relevant legal statute, which calls on the Judges to consider copyright owners' opportunity costs. In the course of calculating the surplus from a deal between sound recording copyright owner and noninteractive webcasting distributor, the Shapley Value model takes into account the extent to which such a deal might enhance or cannibalize revenue from other sources, for either party."<sup>163</sup> However, as shown just below in Section III.C.2, Shapley Value does not properly account for opportunity cost in this setting.

In any event, all of the virtues of Shapley Value mentioned by Professor Willig in this part of his CWDT are shared (or exceeded) by the Nash-in-Nash Bargaining methodology.

## 2. Myerson Value is Superior Here to Shapley Value

This section identifies an inherent flaw in the Shapley Value solution concept as applied in this setting, especially after one drops Professor Willig's assumption that each major record company is "must-have" for statutory webcasters.<sup>164</sup>

The inherent flaw results from the fact that Shapley Value, by construction, does not capture the adverse impact on one record company that chooses not license its music to webcasters if other record companies *do* license their music to webcasters. In economic terms, Shapley Value does not capture the *negative externality* imposed on one record company when other record companies license webcasters and thus draw listening time away from the first record company. This is a major deficiency of Shapley Value for the purposes of this proceeding.<sup>165</sup>

Professor Willig uses Shapley Value, citing Lloyd Shapley's 1953 article, "A Value for  $n$ -Person Games."<sup>166</sup> Shapley's 1953 article spawned a huge literature. One of the most significant contributions to that literature is a 1977 article by Roger Myerson.<sup>167</sup>

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player," meaning that "any player who contributes nothing to any coalition should obtain his value," also is very reasonable and also satisfied by both of our Nash-in-Nash bargaining models. The fourth, "additivity," meaning "invariant against an arbitrary decomposition of the game," is actually a *disadvantage* of Shapley Value relative to Nash-in-Nash bargaining in this case because this principle, when applied to a game in coalitional form, only accounts for the incremental contribution of a player to a coalition, and does not take into account the externality on players left out of a coalition. See the discussion below comparing Myerson Value to Shapley Value.

<sup>163</sup> Willig CWDT, ¶24.

<sup>164</sup> The Nash-in-Nash bargaining solution does not have this flaw.

<sup>165</sup> Shapley Value may be useful in other settings, but Myerson Value would be needed if a cooperative game model is used for rate-setting in this proceeding.

<sup>166</sup> Willig CWDT, footnote 10.

<sup>167</sup> Roger B. Myerson, "Value of Games in Partition Function Form," 6 *International Journal of Game Theory* 23 (1977). Professor Myerson was awarded the Nobel Prize in Economics in 2007.

Myerson identified an important limitation of Shapley Value. He pointed out that Shapley Value relies on certain assumptions that are not valid in many settings. Myerson developed a method that is more general than Shapley Value and can handle more settings. “Myerson Value” is equal to Shapley Value in settings where the payoff structure corresponds to the one assumed by Shapley in his 1953 paper. But Myerson Value is superior to Shapley Value in other settings involving “contracting externalities” that cannot be captured using the Shapley payoff structure.

Contracting externalities arise when one party is affected by contracts signed by *other* parties. The setting being studied in this proceeding involves contracting externalities among the record companies, so Myerson Value is needed here rather than Shapley Value.<sup>168</sup>

To illustrate how these contracting externalities arise in the current setting, suppose that Warner is not a must-have record company, and consider the situation in which Pandora is operating its webcasting service without music from Warner. Warner earns no royalties from the listening hours on Pandora. Now suppose that Pandora ceases to operate. Some of the listening hours on Pandora would divert to other forms of listening, on which Warner would earn revenue. Therefore, Warner is better off if Pandora ceases to operate than if Pandora operates without a license from Warner but with licenses from other labels. In the language of Shapley Value, the payoff to Warner when it is *not* in a coalition with the webcaster depends on which record companies *are* in that coalition. In economic terms, this tells us that the licensing agreements between Pandora and other record companies impose “negative contracting externalities” on Warner. These contracting externalities should factor into any bargaining model of negotiations between webcasters and record companies.

Shapley Value, by construction, does not account for the negative contracting externalities imposed on one record company by coalitions consisting of a webcaster and *other* record companies. The Shapley Value model thus understates the incentive of record companies to join the webcaster coalition, i.e., to license to webcasters. This causes Shapley Value to *systematically overstate* the royalties that record companies would negotiate with webcasters, which renders Shapley Value unsuitable for use in the current proceeding. Myerson Value corrects this bias.

Notably, in the Shapley Value models used in *Phonorecords III*, there were no contracting externalities among copyright holders, because all of the copyright holders in the model were “must-have” for the service in question. Put differently, “must-have” copyright holders are not subject to these negative contracting externalities. Similarly, in Professor Willig’s model, under his assumption that all three major record companies are “must-have” for the webcaster, the only entity impacted by negative contracting externalities is the independent record company. For this reason, the difference between Shapley Value and Myerson Value would be relatively small if one were to adopt Professor Willig’s unfounded assumption that all three major record labels are

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<sup>168</sup> See Appendix F for further explanation. For one explanation of this shortcoming of Shapley Value, see Catherine C. de Fontenay and Joshua S. Gans, “Bilateral Bargaining with Externalities,” 62 *Journal of Industrial Economics* 759 (2014). They state: “The presence of externalities means that coalitions may impose externalities on other coalitions; thus, the partition of the whole space of players (specifying who is in a coalition with whom) is relevant to the payoff agents receive. The resulting equilibrium outcome is a Myerson-Shapley allocation generalized to partition function spaces.” See also Noemi Navarro, “Fair Allocation in Networks with Externalities,” 58 *Games and Economic Behavior* 354 (2007).



“must-have” for webcasters. See Appendix F.<sup>169</sup> As shown in the first row of Figure 11, when majors are assumed to be must-have there is little difference between the royalty rates implied by the Shapley Value and Myerson Value models.

Without Professor Willig’s “must-have” assumption, however, the difference between Shapley Value and Myerson Value in his model is significant, as shown in the second row of Figure 11. Even if one retains Professor Willig’s overstated margin and opportunity cost inputs (which I will adjust as well in figures to follow below), the royalty rate for advertising-supported webcasters drops from [REDACTED] using the Shapley Value without the must-have assumption to [REDACTED] using the Myerson Value, and the royalty rate for subscription webcasters drops from [REDACTED] per performance [REDACTED] per performance.<sup>170</sup> This result is, incidentally, comparable to what one obtains from the Nash-in-Nash bargaining model, which is displayed as well for comparison’s sake (and, as noted above, superior for all the reasons discussed).

#### ***D. The Statutory Royalty Rates Implied by the Necessary Corrections to Professor Willig’s Models***

This section calculates the statutory royalty rates generated by Professor Willig’s bargaining models after making the various corrections identified above in Sections III.A, III.B, and III.C. I display the results for each of the Nash-in-Nash bargaining, Shapley Value, and Myerson Value models, but for reasons given above, I will reiterate that (1) the Nash-in-Nash Bargaining model is clearly superior to Professor Willig’s Shapley Value model, and (2) if cooperative game theory methods are to be used, Myerson Value is required here rather than Shapley Value.

<sup>169</sup> My calculations of Myerson Value use a simplified version of Professor Willig’s Shapley Value model, in which advertising-supported webcasters and subscription webcasters are treated separately. Appendix F shows that this simplification makes only a minor difference, using all of Professor Willig’s inputs but correcting his equation error.

<sup>170</sup> These calculations do correct the equation error in the Willig CWDT that is discussed in Appendix E. They also use power ratios that correspond to the long run effect of the six month Label Suppression Experiments, using the upper end of the 95% confidence interval as described in my CWDT. These power ratios are substantially lower than the 100% power ratio that Professor Willig assumes (without any justification provided) for the combined independent record label. See Reiley WRT at ¶¶27-30; Shapiro CWDT, Appendix F at 5.



### 1. Corrections to Professor Willig's Nash-in-Nash Bargaining Model

First, I correct the inputs used in Professor Willig's Nash-in-Nash bargaining model. The results are shown in Figure 12. The first column shows the rates generated by Professor Willig's model. The second column shows the rates generated by his model using corrected margins derived from the same forecast that Professor Willig uses (the Scenario 2 forecast from the Pandora Merger Proxy documents for 2021-2025), as explained in Section III.A.1. The third column also corrects the record industry opportunity cost, as explained in Section III.A.2.<sup>171</sup>

The second column in Figure 12 shows that just correcting Professor Willig's forecasted margins lowers the rates implied by his Nash-in-Nash Bargaining model from ██████ per performance to ██████ per performance for advertising-supported webcasters, and from ██████ per performance to ██████ per performance for subscription webcasters. This correction, on its own, is necessary but not sufficient.

The third column in Figure 12 shows that also correcting Professor Willig's estimate of record industry opportunity cost further lowers the royalty rates generated by his Nash-in-Nash Bargaining model. For advertising-supported webcasters, the per-performance rate falls from ██████ to ██████. For subscription webcasters, the per-performance rate falls from ██████ to ██████. These input corrections are also necessary but also still not sufficient.

Next, I drop Professor Willig's unfounded assumption that each of the three Majors is "must-have" for statutory webcasters. When dropping this assumption, I offer two approaches to estimating the amount of listening that would be lost due to the lack of access to the repertoire of a given record company. Each uses a variant of what I call the "power ratio" in my CWDT.

The power ratio for a given record company is defined as the ratio of (a) the share of listening hours lost due to lack of access to the repertoire of that record company, to (b) that record company's share of listening hours. For example, if a record company accounts for 20 percent of the listening hours, and losing access to that record company's repertoire would cause the service to lose 20 percent of its listening hours, then the power ratio associated with that record company would be 100%. Alternatively, if the record company accounts for 20 percent of the listening hours, and losing access to that record company's repertoire would cause the service to lose 15

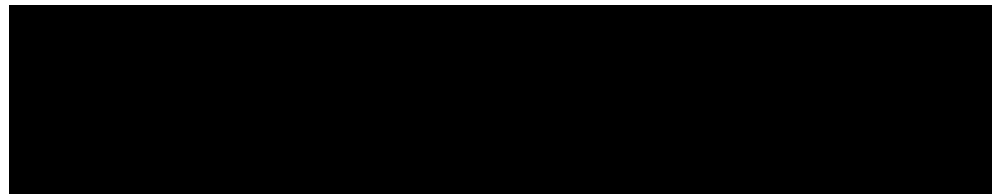
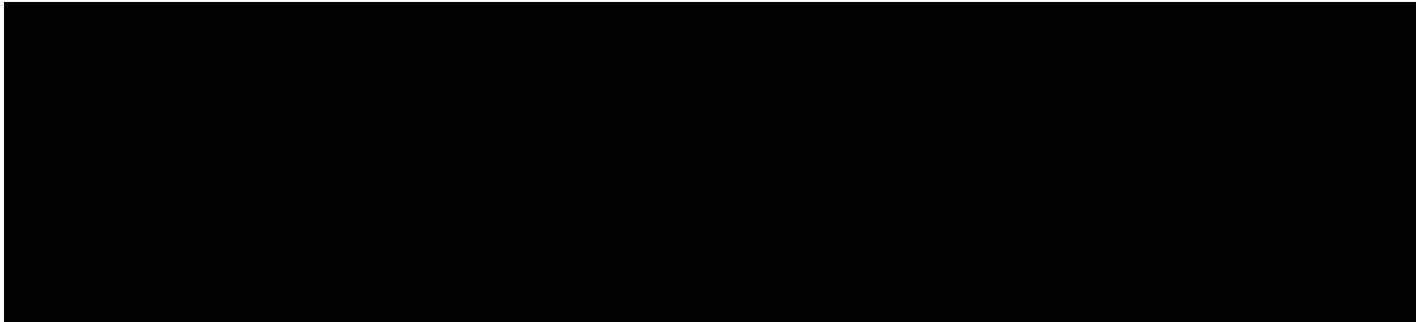
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<sup>171</sup> All of the calculations presented in this section also correct the faulty equations in the Willig CWDT discussed in Section III.A.3.

percent of its listening hours, then the power ratio associated with that record company would be 75% (15 percent/20 percent).

My preferred approach for calculating the power ratio for a major label relies on evidence from the Pandora Label Suppression Experiments. An alternative approach is to assume that the power ratio for each record company is 100%, where the loss of listening hours is equal to the label's share of plays on the service. This is the approach taken in the Willig CWDT for the independent record company, which is the only record company not assumed to be "must-have" in his model.<sup>172</sup>

Figure 13 shows the results of dropping Professor Willig's "must-have" condition and applying different assumptions about how much listening the licensee service would lose absent a major label (i.e., the "power ratio" for that label).

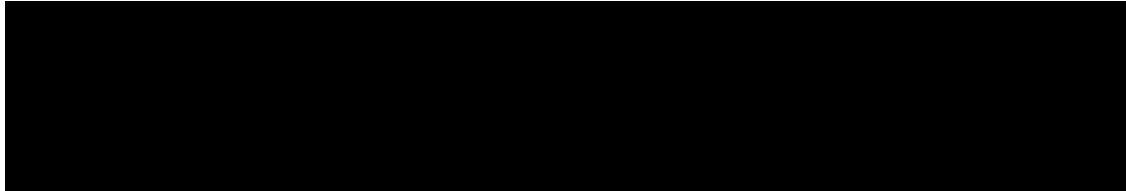
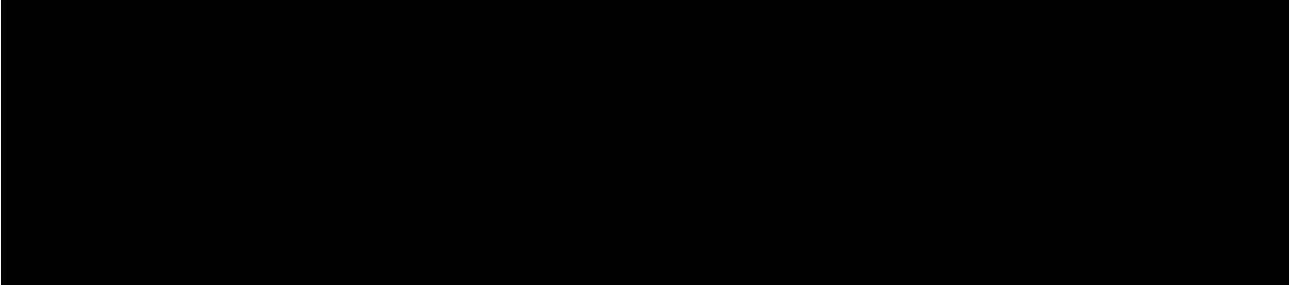


Removing the "must-have" assumption for major record companies has a significant impact on the Nash-in-Nash Bargaining royalty rates. Using the power ratios derived from the Pandora Label Suppression experiments, the advertising-supported royalty rate falls from [REDACTED] to [REDACTED], and the subscription royalty rate falls from [REDACTED] to [REDACTED].

After making these corrections, Professor Willig's Nash-in-Nash Bargaining model gives very similar results to the slightly different Nash-in-Nash bargaining model used in my CWDT. Figure 14 shows the results of my Nash-in-Nash bargaining model, using all of the same inputs that were used in Professor Willig's Nash-in-Nash bargaining model to generate the previous figure.

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<sup>172</sup> Willig CWDT, Appendix C at n. 2.



The sole point of Figure 14 is to demonstrate that the large differences in the rates proposed in the Willig CWDT and my CWDT using Nash-in-Nash Bargaining models are caused by our using different inputs, and by Professor Willig's assumption that the Majors are "must-have" for statutory webcasters. These differences are not caused by any material differences between our models. Using corrected inputs, and dropping his "must-have" assumption, Professor Willig's model gives similar results to the Nash-in-Nash bargaining model that I used in my CWDT.

## **2. Corrections to Professor Willig's Shapley Value Model**

I now calculate the statutory royalty rates generated using Professor Willig's Shapley Value model if one corrects the inputs, drops his assumption that the Majors are "must-have" for statutory webcasters, and uses Myerson Value rather than Shapley Value. With these corrections, demonstrated in Figure 15, Professor Willig's Shapley Value model generates significantly lower and more economically appropriate royalty rates.

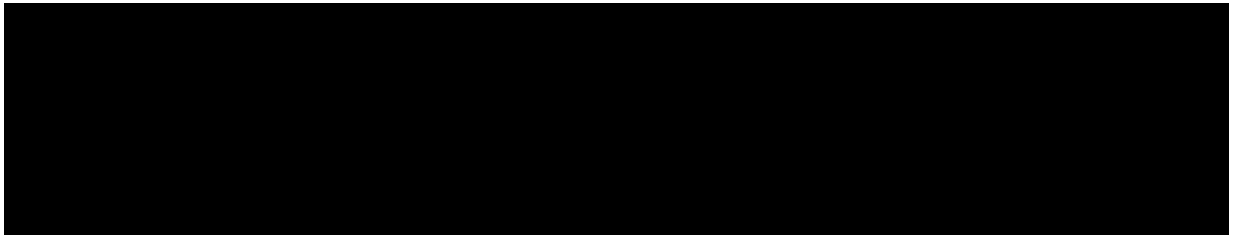
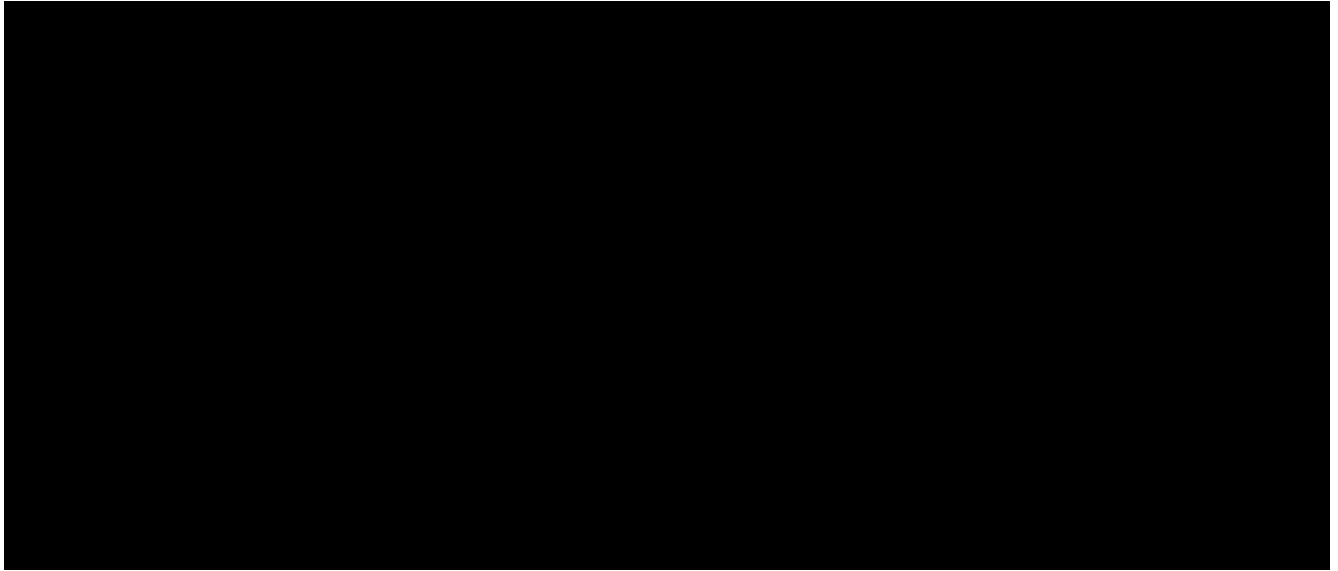


Figure 15 confirms that Myerson Value, by properly accounting for negative contracting externalities, generates significantly lower royalty rates than Shapley Value in Professor Willig's model, once one drops his "must-have" assumption. Using Myerson Value, with corrected inputs, Professor Willig's model generates a statutory royalty rate of [REDACTED] per performance for advertising-supported webcasters and [REDACTED] per performance for subscription webcasters.



## Appendix A: Materials Relied Upon

<b><i>CRB Testimony and Determinations</i></b>
Phonorecords III Determination
SDARS III Determination
SDARS III, Written Direct Testimony of Jonathan Orszag
SDARS III, Written Direct Testimony of Robert Willig
Web IV Determination
Web IV, Written Direct Testimony of Carl Shapiro
Web V, Corrected Written Direct Testimony of Carl Shapiro & Backup Materials
Web V, Corrected Written Direct Testimony of Robert Willig & Backup Materials
Web V, Written Direct Testimony of Aaron Harrison
Web V, Written Direct Testimony of Catherine Tucker
Web V, Written Direct Testimony of Christopher Phillips
Web V, Written Direct Testimony of Dominique Hanssens
Web V, Written Direct Testimony of Gal Zauberman & Backup Materials
Web V, Written Direct Testimony of Jonathan Orszag & Backup Materials
Web V, Written Direct Testimony of Mark Piibe
Web V, Written Direct Testimony of Mike Sherwood
Web V, Written Direct Testimony of Reni Adadevoh
Web V, Written Rebuttal Testimony of Jason Ryan
Web V, Written Direct Testimony of David Reiley
<b><i>Academic Articles &amp; Books</i></b>
Alvin E. Roth, ed., <i>The Shapley Value: Essays in honor of Lloyd S. Shapley</i> , Cambridge University Press (1988)
Catherine C. de Fontenay and Joshua S. Gans, “Bilateral Bargaining with Externalities,” 52 <i>Journal of Industrial Economics</i> 756 (2014)
L.S. Shapley and Martin Shubik, “A Method for Evaluating the Distribution of Power in a Committee System,” 48 <i>The American Political Science Review</i> 787 (1954)
Luke M. Froeb, Vladimir Mares, and Steven T. Tschantz, “Nash-in-Shapley: Bilateral Bargaining with Recursive Threat Points” (June 2019)
Melvyn G. Coles and Abhinay Muthoo (2003), “Bargaining in a Non-Stationary Environment,” <i>Journal of Economic Theory</i> 109(1), 70-89

Noemi Navarro, “Fair Allocation in Networks with Externalities,” 58 <i>Games and Economic Behavior</i> 354 (2007)
Roger B. Myerson, “Value of Games in Partition Function Form,” 6 <i>International Journal of Game Theory</i> 23 (1977)
Xiaowei Yu and Keith Waehrer, “Recursive Nash-in-Nash Bargaining Solution” (January 2018)
<b><i>Depositions</i></b>
Deposition of Aaron Harrison
Deposition of Reni Adadevoh
<b><i>Pandora Documents and Data</i></b>
PANWEBV_00000064_Pandora_WebV_001
Jul_2017-Jul_2019_Royalties.xlsx
2018_Content_Cost_Breakdown.xlsx
Long_Term_Model_July_18_2018.pptx
Non-music_Ad_Rev_2020.01.07.xlsx
Pandora_2024_P&L_2019.09.09.xlsx
Pandora_Metrics.pptx
Scenario_Detail_2019.10.24.pptx
<b><i>SoundExchange Documents &amp; Data</i></b>
Royalty_Payment_Statements
Sony - US P&L.pdf
SOUNDEX_W5_000002955
SOUNDEX_W5_000004474
SOUNDEX_W5_000011145
SOUNDEX_W5_000016125
SOUNDEX_W5_000087744 (SXM-PAN Reb. Ex. 012)
SOUNDEX_W5_000087842 (SXM-PAN Reb. Ex. 013)
SOUNDEX_W5_000093274 (SXM-PAN Reb. Ex. 016)
SOUNDEX_W5_000096672 (SXM-PAN Reb. Ex. 011)
SOUNDEX_W5_000097618 (SXM-PAN Reb. Ex. 005)
SOUNDEX_W5_000097619 (SXM-PAN Reb. Ex. 006)
SOUNDEX_W5_000103352 (SXM-PAN Reb. Ex. 020)
SOUNDEX_W5_000149975 (SXM-PAN Reb. Ex. 008)
SOUNDEX_W5_000152271 (SXM-PAN Reb. Ex. 009)

SOUNDEX_W5_000160408 (SXM-PAN Reb. Ex. 018)
SOUNDEX_W5_000161782 (SXM-PAN Reb. Ex. 014)
SOUNDEX_W5_000161784 (SXM-PAN Reb. Ex. 017)
SOUNDEX_W5_000162778 (SXM-PAN Reb. Ex. 007)
SOUNDEX_W5_000164369 (SXM-PAN Reb. Ex. 015)
SOUNDEX_W5_000167401 (SXM-PAN Reb. Ex. 010)
SOUNDEX_W5_000169141 (SXM-PAN Reb. Ex. 019)
SoundExchange Exhibit 27, Amendment No. 4, Streaming Agreement between Pandora and SME (effective July 1, 2018) (SOUNDEX_W5_000003033)
SoundExchange Exhibit 42, Annual Music Study 2018 Report to RIAA (April, 2019)
SoundExchange Exhibit 44, Edison Research, Americans' Share of Time Spent Listening to Audio and Music Sources
SoundExchange Exhibit 45, JMP Pandora Company Update, Sirius XM Announces All-Stock Agreement to Acquire Pandora
SoundExchange Exhibit 48, Pandora Media Inc. Schedule 14A, Securites and Exchange Commission (December 20, 2018)
SoundExchange Exhibit 57 (PANWEBV_00002985)
SoundExchange Exhibit 58, Pandora Brand & Product Equity Tracker (January, 2019)
SoundExchange Exhibit 59, Pandora Brand & Product Equity Tracker (April, 2019)
SoundExchange Exhibit 64, Sirius XM/Pandora Competitive Update – U.S. Audio Landscape
SoundExchange Exhibit 81, Spotify Renewal Contingency Plan Analysis (May, 2019)
SoundExchange Royalty Data
UMG US Margin P&L.xlsx
Warner US Recorded Music P&L.pdf
<b><i>Other Documents</i></b>
Rhian Jones, "Vevo revenues rise 30% to hit \$650M in 2017, profitability forecast in 2018," Music Business Worldwide (January 2, 2018)
Tim Ingham, "Here's exactly how many shares the major labels and Merlin bought in Spotify – and what those stakes are worth now," <i>The MBW Review</i> (May 14, 2018)
Jem Aswad, "Warner Music Group sells its entire stake in Spotify," <i>Variety</i> (August 7, 2018)

## Appendix B: Sequential Nash Bargaining with Time-Varying Payoffs

This Appendix proves that the Nash Bargaining outcome between a record company and a music service depends on the long-term impact on each of them if they do not reach an agreement. More precisely, the Nash Bargaining outcome depends upon the *present discounted value* of each party's payoff if they fail to reach an agreement. Bargaining outcomes do *not* just depend upon the short-term impact of an impasse.

For a closely related result involving the Subgame Perfect Nash Equilibrium (SPNE) of alternating move bargaining games, see Melvyn Coles and Abhinav Muthoo, 2003, "Bargaining in a Non-Stationary Environment," *Journal of Economic Theory* 109(1), 70-89. They prove (at p. 82), in an alternating move bargaining game, as the time interval between offers goes to zero, that the unique SPNE gives each party a payoff equal to the payoff that party gets in the one-shot Nash Bargaining game where each party's disagreement payoff is the present discounted value of that party's payoff if the parties never agree. Here I show that the same result holds if the two parties engage in Nash Bargaining in each period until they reach agreement.

The two parties are denoted by  $A$  and  $B$ . Payoffs are earned at dates  $t = 1, 2, \dots$ . The one-period discount factor is the same for both parties and is denoted by  $\delta < 1$ . During any period in which the two parties have reached an agreement, their combined payoff is denoted by  $X$ . This simplifying assumption that the flow agreement payoff is stationary is not required for the result. The combined present discounted value (PDV) of reaching an agreement is  $W = X(1 + \delta + \delta^2 + \dots)$ .

The payoffs to  $A$  and  $B$  during period  $t$  if they have *not* reached an agreement are denoted by  $a_t$  and  $b_t$  respectively. This structure allows for the possibility that one party may incur the bulk of its disagreement costs soon after an impasse occurs, while the other party incurs the bulk of its disagreement costs further into the future. The present discounted value, starting in period  $t$ , of the payoff to  $A$  if an agreement is never reached is therefore given by

$$A_t = a_t + \delta a_{t+1} + \delta^2 a_{t+2} + \dots$$

and likewise for  $B$ , with

$$B_t = b_t + \delta b_{t+1} + \delta^2 b_{t+2} + \dots$$

We assume there are gains during every period, i.e.,  $X > a_t + b_t$  for all  $t$ . We are interested in the Nash Bargaining outcome in which the two parties reach an agreement in the first period and share equally in the gains from trade.

Consider for a moment the outcome of *one-shot* Nash Bargaining at date  $t = 1$ , meaning that the two parties have only one opportunity to reach an agreement. If they fail to reach an agreement at date  $t = 1$ , they will have no further opportunities to do so. In this one-shot Nash Bargaining situation, the walk-away payoffs of the two parties are  $A_1$  and  $B_1$ . Denote by  $U_1$  and  $V_1$  the PDV of the equilibrium payoffs to  $A$  and  $B$  respectively from one-shot Nash Bargaining. Splitting the gains from trade equally means that  $U_1$  and  $V_1$  must satisfy the following pair of equations:

$$U_1 + V_1 = W \text{ and } U_1 - A_1 = V_1 - B_1.$$

Solving gives

$$U_1 = \frac{W + (A_1 - B_1)}{2} \text{ and } V_1 = \frac{W + (B_1 - A_1)}{2}.$$

These payoffs reflect the impact of an impasse on the two parties measured in PDV terms.

We now show that this same result applies with *sequential* Nash Bargaining. This means that when the parties bargain at date  $t = 1$ , they both recognize and understand that if they fail to reach an agreement at date  $t = 1$ , they will have further opportunities at dates  $t = 2, 3, \dots$

Denote by  $U_t$  and  $V_t$  the PDV of the payoffs to  $A$  and  $B$  respectively if they have not reached an agreement by date  $t$  and engage in Nash Bargaining at that date. (Payoffs already earned prior to date  $t$  are not included in these variables because they are unaffected by what happens starting at date  $t$ , and thus are irrelevant for future decisions.) For ease of exposition, we assume that starting at some large but finite date  $T$ , the flow disagreement payoffs to  $A$  and  $B$  stabilize. Formally this means that  $a_t = a$  and  $b_t = b$  for  $t = T, T + 1, \dots$

We now demonstrate that the following PDV payoffs satisfy the requirements of Nash Bargaining at all dates:

$$U_t = \frac{W + (A_t - B_t)}{2} \text{ and } V_t = \frac{W + (B_t - A_t)}{2} \quad (1)$$

We begin by consider a date  $t > T$ . Since the environment is stationary after date  $T$ , we know that the PDV of payoffs to  $A$  and  $B$  if they have not reached an agreement by date  $t > T$  and engage in Nash Bargaining at date  $t$  does not vary over time after date  $T$ . Denote by  $\bar{U}$  and  $\bar{V}$  these PDV payoffs to  $A$  and  $B$  respectively.

We now consider Nash Bargaining between  $A$  and  $B$  at date  $t$ . If they fail to reach an agreement at  $t$ , their Nash Bargaining payoffs starting at  $t + 1$  are  $\bar{U}$  and  $\bar{V}$  respectively. Therefore, their walk-away payoffs at date  $t$  are given by  $a + \delta\bar{U}$  and  $b + \delta\bar{V}$ , respectively. Splitting the gains from trade equally requires that their PDV payoffs at date  $t$  solve this pair of equations:

$$\bar{U} + \bar{V} = W \text{ and } \bar{U} - (a + \delta\bar{U}) = \bar{V} - (b + \delta\bar{V}).$$

Solving for  $\bar{U}$  and  $\bar{V}$  gives

$$\bar{U} = \frac{W + \left(\frac{a}{1-\delta} - \frac{b}{1-\delta}\right)}{2} \text{ and } \bar{V} = \frac{W + \left(\frac{b}{1-\delta} - \frac{a}{1-\delta}\right)}{2}.$$

Since  $A_t = a/(1 - \delta)$  and  $B_t = b/(1 - \delta)$  for  $t > T$ , these equations can be written as

$$\bar{U} = \frac{W + (A_t - B_t)}{2} \text{ and } \bar{V} = \frac{W + (B_t - A_t)}{2}.$$

This shows that the claim is true for any  $t \geq T$ .

We now show the claim is also true for  $t < T$ . The demonstration proceeds by induction on the number of periods remaining until date  $T$ . Suppose that these two equations apply at date  $t \leq T$  and consider Nash Bargaining at date  $t - 1$ . The combined PDV payoff from reaching an agreement is  $W$ . The PDV payoff to  $A$  from *not* reaching an agreement is given by  $a_{t-1} + \delta U_t$ , and likewise for  $B$ . The PDV payoffs to  $A$  and  $B$  from Nash Bargaining at date  $t - 1$  must therefore satisfy:

$$U_{t-1} + V_{t-1} = W \text{ and } U_{t-1} - (a_{t-1} + \delta U_t) = V_{t-1} - (b_{t-1} + \delta V_t).$$

Solving for  $U_{t-1}$  and  $V_{t-1}$  gives



$$U_{t-1} = \frac{W + ((a_{t-1} + \delta U_t) - (b_{t-1} + \delta V_t))}{2}, V_{t-1} = \frac{W + ((b_{t-1} + \delta V_t) - (a_{t-1} + \delta U_t))}{2}$$

Substituting the expressions for  $U_t$  and  $V_t$  given in equation (1) above (this is the induction step),  $U_{t-1}$  can be written as

$$\begin{aligned} U_{t-1} &= \frac{1}{2} \left\{ W + a_{t-1} + \frac{\delta W + \delta A_t - \delta B_t}{2} - b_{t-1} - \frac{\delta W - \delta A_t + \delta B_t}{2} \right\} \\ &= \frac{1}{2} \{ W + a_{t-1} + \delta A_t - b_{t-1} - \delta B_t \} \\ &= \frac{W + (A_{t-1} - B_{t-1})}{2} \end{aligned}$$

using the fact that  $A_{t-1} = a_{t-1} + \delta A_t$ , and  $B_{t-1} = b_{t-1} + \delta B_t$ . Similarly, we get

$$V_{t-1} = \frac{W + (B_{t-1} - A_{t-1})}{2}.$$

This proves that the equilibrium of the sequential game starting at any  $t \geq 1$  is the one-shot Nash Bargaining Solution using the present discounted value of disagreement payoffs.

## Appendix C: Pandora Margins

Both the Willig CWDT and my CWDT rely on financial documents prepared by Pandora to estimate the margin earned by an advertising-supported webcaster and by a subscription based webcaster. These margins are used in Professor Willig's and my Nash-in-Nash Bargaining models, and in Professor Willig's Shapley Value model. My CWDT derives the margins from actual data for the year 2018 from Pandora's LRS (Long Range Scenario) P&L. The Willig CWDT relies on financial forecasts for 2021-2025 contained in Pandora's Schedule 14A Proxy Statements to the SEC ("Proxy Statements") prepared in anticipation of Pandora's merger with Sirius XM.

The Proxy Statements include two forecasts, called "Scenario 2" and "Scenario 1A," based on different assumptions regarding the future growth in Pandora users and subscribers, as well as the average revenue per user or per subscriber, among other factors. Professor Willig relies on Scenario 2 which, as explained below, is the more optimistic of the two scenarios.

As explained in the Ryan WRT, Sirius XM prepares another set of forecasts in the ordinary course of business which are collected into its LRS model. Following the merger between Sirius XM and Pandora, Pandora has harmonized its financial and accounting conventions to follow those of Sirius XM. Hence, there is an LRS model for Pandora as well as one for Sirius XM.

Figures 6 and 7 in Section III.A.1 show the estimated pre-royalty variable margin for Pandora's advertising-supported and subscription non-interactive services using data from the three forecasts described above: (1) Scenario 2 from the Proxy Statements; (2) Scenario 1A from the Proxy Statements; and (3) the LRS P&L data.

### A. Comparing the LRS and the Proxy Statements Projections

The Proxy Statements relied upon by Professor Willig have several shortcomings: (a) they are not as recent as the LRS data; (b) they are based on assumptions that have turned out not to be accurate; and (c) they do not provide the level of detail necessary to calculate the relevant margins. For further details, see the Written Rebuttal Testimony of Jason Ryan (Ryan WRT). These shortcomings are addressed below.

#### 1. Sirius XM LRS Model

The LRS reports are used by Sirius XM's and Pandora's upper management to inform their business decisions.<sup>173</sup> These estimates are not prepared "for these proceedings" as claimed by Professor Willig.<sup>174</sup> Sirius XM's contemporaneous LRS forecasts were used extensively by Professor Lys when he testified on behalf of SoundExchange during the *SDARS III* proceeding.

My CWDT uses Pandora's LRS P&L data for 2018. Figures 6 and 7 in Section III.A.1 report Pandora's estimated margins, based on the revenue, cost, and subscriber forecasts for 2021-2024 included in Pandora's LRS P&L data. Pandora's estimated margins during 2021-2024 using this data source are similar to the estimated margins using actual data for 2018:

<sup>173</sup> See Ryan WRT at ¶ 36.

<sup>174</sup> Willig CWDT Appendix D at ¶ 3, footnote 4 ("I understand Pandora also recently produced additional projections that it prepared for these proceedings [REDACTED]. See SoundExchange Exhibit 57.").



- For Pandora's subscription service, I calculate the margin using 2018 actual financial results as [REDACTED] percent of revenue, which is [REDACTED] per performance. Using the 2021-2024 LRS projections, the margin is equal to [REDACTED] percent of revenue, which is [REDACTED] per performance.
- For the advertising-supported service, I calculate the margin using 2018 actual financial results as [REDACTED] percent of revenue, which is [REDACTED] per performance. Using the 2021-2024 LRS projections, the margin is equal to [REDACTED] percent of revenue, which is [REDACTED] per performance.<sup>175</sup>

## 2. Pandora's SEC Filings

The Willig CWDT relies on Pandora's Proxy Statements, which were part of Pandora's SEC filings in advance of its merger with Sirius XM, to forecast Pandora's margins. This data source and Professor Willig's methodology have a number of limitations.

First, the Pandora LRS forecast is more recent. The Proxy Statements forecasts were last updated in June and July 2018,<sup>176</sup> while the LRS forecasts were prepared in June 2019.<sup>177</sup> Naturally, more recent projections are bound to be more accurate.

Second, the Scenario 2 forecasts used by Professor Willig have already been proven to be overly optimistic. For example, the financial model underlying the projections in Scenario 2 assumed [REDACTED] total active users in 2019, including both the advertising-supported and subscription services. However, as of December 2019, Pandora reports [REDACTED] average monthly total active users, some [REDACTED].<sup>178</sup>

Third, the justifications provided by Professor Willig for using the Scenario 2 forecast are flawed. Most notably, the Proxy Statements themselves state that Scenario 2 is a more aggressive and optimistic forecast than Scenario 1 and that Pandora's performance could fall well short of the projections in Scenario 2.<sup>179</sup> In addition, Professor Willig supports his choice of relying on Scenario 2 based on it being the forecast that more closely approximates the acquisition price ultimately paid by Sirius XM.<sup>180</sup> However, the acquisition price was determined

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<sup>175</sup> The calculation of the pre-royalty marginal profit in Column 4 of Figures 6 and 7 follows the methodology used in my CWDT with two primary exceptions. First, Figure 6 and 7 include among the variable costs Pandora's employees' stock-based compensation, as suggested by Professor Willig. This change applies to both the marginal profit calculated for the advertising-supported service and the subscription service. Second, I exclude from "Sales & Sales Operations" the portion of these costs associated with revenues not generated by the advertising-supported music service (Ryan WRT at ¶ 16).

<sup>176</sup> Ryan WRT at ¶ 33.

<sup>177</sup> Ryan WRT at ¶ 37.

<sup>178</sup> Ryan WRT at ¶ 40, fn. 39.

<sup>179</sup> For example, "In June 2018, Pandora's management also updated the unaudited forecasted financial information that was initially prepared in October 2017 to present a more optimistic view driven primarily by audience and hours growth from improvements in marketing efficiency, higher marketing spending and growth in audience engagement through Pandora's new content and product capabilities, which we refer to as the Pandora Scenario 2 Forecasts." SoundExchange Exhibit 48, page 58.

<sup>180</sup> Willig CWDT, Appendix D at ¶ 3 ("I utilize the Scenario 2 projections in my analysis because Pandora's investment bankers prepared discounted cash flow valuation analyses using these Scenario 2 projections, which produced valuations in-line with the \$3.5 billion market price paid by SiriusXM to acquire the company.")

in part by synergies not included in Scenario 2 which considers Pandora as a standalone company. Therefore, one cannot use Pandora's standalone discounted cash flow forecast to assess the acquisition price. In contrast to the Proxy Statements, the LRS forecast does include anticipated synergies.

Fourth, as discussed extensively in the next section, the data used by Professor Willig do not provide enough details to accurately calculate margins. To overcome these limitations, Professor Willig made several assumptions regarding the amount of revenue to be attributed to the advertising-supported service, the amount of revenue to be attributed to the Pandora Plus service, the allocation of variable costs across the different services, the classification of costs into "fixed" and "variable" categories, etc. These assumptions often produce results that are significantly different from the actual figures underlying the Scenario 2 forecasts, which Pandora has provided to me. Using the more accurate data, I recalculate the margins reported in the Willig CWDT, finding a significantly lower margin for the advertising-supported service than the one calculated by Professor Willig. The recalculated margin is much closer to the margin I calculate using the LRS data.

## ***B. Correcting Professor Willig's Estimates Using Data Underlying the Scenario 2 Projections***

As indicated in the previous section, the data that Professor Willig uses do not provide enough details to accurately calculate the relevant margins. Pandora has provided me with the financial analyses that underlie the Scenario 2 projections. These financial analyses contain the additional detail necessary to overcome the limitations of the aggregate figures included in the Proxy Statements.<sup>181</sup> In this section I show that after Professor Willig's calculations are modified to account for these additional data, the resulting margins are closer to the margins estimated in my CWDT.

### **1. Incorrect Attribution of Revenue**

First, Professor Willig assumes that all advertising revenue reported in Scenario 2 of Pandora's Proxy Statements is for Pandora's advertising-supported music service. However, as explained in the Ryan WRT, there are two significant categories of advertising revenue that should not be attributed to Pandora's advertising-supported music service: (1) revenue generated by advertising services that Pandora provides to third-parties such as SoundCloud or through its AdsWizz business; and (2) revenue generated through non-music content.<sup>182</sup> By failing to exclude these revenues Professor Willig substantially *overestimates* the absolute level and the growth rate of the revenue associated with Pandora's advertising-supported music service. Professor Willig projects that Pandora's advertising-supported service revenue will grow from \$1.554 billion in 2021 to \$2.237 billion in 2025, a 44% increase. However, after excluding the revenues described in (1) and (2) above, the revenue from music on Pandora's advertising-supported service is projected to grow from [REDACTED] in 2021 to [REDACTED] in 2025, a [REDACTED].<sup>183</sup>

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<sup>181</sup> Ryan WRT at ¶ 5.

<sup>182</sup> Ryan WRT at ¶ 6.

<sup>183</sup> Ryan WRT at ¶ 9.



Second, Professor Willig [REDACTED]

[REDACTED] The projections included in Scenario 2 do not report subscription revenue separately for Pandora Premium and Pandora Plus. They only report the total subscription revenue, i.e. the sum of revenue from Pandora Premium and Pandora Plus.<sup>184</sup> Professor Willig [REDACTED]

[REDACTED] However, the financial documents underlying the projections in Scenario 2 reveal that Professor Willig [REDACTED] the revenue associated with Pandora Plus. His calculations show subscription revenue for Pandora Plus growing from a projected [REDACTED] in 2021 to a projected [REDACTED] in 2025, a [REDACTED]. However, the financial documents underlying Scenario 2 show that Pandora Plus subscription revenue was projected to grow from [REDACTED] in 2021 to [REDACTED] in 2025, a [REDACTED].<sup>186</sup> This difference is driven by the fact that Scenario 2 assumes a significant growth in the number of subscribers and subscription revenue associated with Pandora's interactive subscription service, Pandora Premium, some of which Professor Willig incorrectly attributes to Pandora Plus.

## 2. Incorrect Classification and Allocation of Costs

Both Professor Willig and I classify Pandora's cost categories as either fixed or variable costs. This is important because only variable costs should be netted out from revenues to calculate the pre-royalty marginal profit. In addition, one needs to allocate variable costs and fixed costs to the advertising-supported service and to the subscription service for Professor Willig's Shapley Value model. Professor Willig's classification of variable and fixed costs is inconsistent with how costs are incurred by Pandora. Furthermore, the methodology he uses to allocate costs across the various services is often incorrect. In particular:

- Professor Willig treats all "Sales & Marketing" costs as fixed and excludes them from the calculation of the variable margin. However, as explained in the Ryan WRT, several cost categories are included in "Sales & Marketing" and only the costs classified as "Other Marketing" are truly fixed.<sup>187</sup> The rest should either be allocated exclusively to Pandora's advertising-supported service as a variable cost (the category called "Sales & Sales Operations"),<sup>188</sup> or should be allocated exclusively to Pandora Plus and Pandora Premium

<sup>184</sup> Note that the total subscription revenue Scenario 2 from the Proxy Statements includes other revenue not related to Pandora's advertising-supported or subscription music services. Professor Willig should have excluded these revenues from his calculations but in practice they represent 0.1% or less of the subscription revenue reported in Scenario 2, so their inclusion or exclusion does not materially affect the results.

<sup>185</sup> According to the notes to rows [2] and [3] to Exhibit D.6 of Professor Willig's CWDT [REDACTED]

<sup>186</sup> Ryan WRT at ¶ 11.

<sup>187</sup> Ryan WRT at ¶ 19.

<sup>188</sup> As explained in Ryan's WRT (Ryan WRT at ¶ 16), [REDACTED]

[REDACTED] I only include the portion of Sales & Sales Operations costs associated with the operation of Pandora's advertising-supported music service in the calculation of the marginal profit.



as variable costs (the category “Subscription Commissions”) or should be allocated as a variable cost across all services based on their respective share of revenue (the category “External Marketing”).<sup>189</sup> Because of this error, Professor [REDACTED]

- Professor Willig considers “Product Development” as a variable cost that he allocates across all services proportionally to their revenue shares. However, as explained in the Ryan WRT, only half of the Product Development costs should be considered variable and should be attributed entirely to the ad-supported service.<sup>190</sup> Because of this difference, Professor Willig [REDACTED]
- Professor Willig considers all costs included in the category “COR – Other” as variable and allocates them across services based on service revenue. However, as explained in the Ryan WRT, some of these costs are generated by activities unrelated to the ad-supported or subscription music services. [REDACTED] As such, these costs should be excluded from the analysis, the same way I have excluded revenue associated with these activities above. Not all of the remaining “COR – Other” costs should be allocated across services based on revenue. Some of these costs are related exclusively to the operation of the advertising-supported service (for example, “Ad Serving” costs) and should be allocated entirely to that service. Other costs are generated by the operation of both the advertising-supported service and the subscription service and should be allocated between them based on their usage of Pandora’s ITC infrastructure (for example, “Bandwidth”).<sup>192</sup> Because of this error, Professor Willig [REDACTED]

### 3. Incorrect Calculation of Users, Subscribers, and Performances

Professor Willig incorrectly calculates the projected number of users and subscribers on the advertising-supported service and on Pandora Plus, and the number of performances on the advertising-supported service. The discrepancies between Professor Willig’s analysis and the financial models underlying Scenario 2 are significant because they materially impact the profitability of each user or each listening hour.

<sup>189</sup> Ryan WRT at ¶¶ 16-19.

<sup>190</sup> Ryan WRT at ¶ 22.

<sup>191</sup> These costs include the cost categories [REDACTED]” and “[REDACTED]” from the LRS. See Ryan WRT at ¶ 24.

<sup>192</sup> For a complete description of “COR – Others” see Ryan WRT at Section IV.



First, Professor Willig calculates the number of users on the advertising-supported service between 2021 and 2025 as a straight-line interpolation between the number of users on the service in 2018 and the forecasted number of users in 2025, according to Scenario 2 of the Proxy Statement. This methodology leads Professor Willig to [REDACTED]. Scenario 2 forecasts are based on an assumption of [REDACTED] monthly users, on average, on the advertising-supported service between 2021 and 2025. Professor Willig's methodology estimates approximately [REDACTED] monthly users, on average, between 2021 and 2025.<sup>193</sup> This, in turn, causes him to [REDACTED].

Second, Professor Willig overestimates the number of subscribers to Pandora Plus. He estimates the number of subscribers for Pandora Plus as the ratio between the revenue allocated to Pandora Plus (an allocation, as noted above, that is itself incorrect) and the expected Pandora Plus revenue per subscriber in 2021-2025 which Professor Willig derives from a third-party financial analysis firm.<sup>194</sup> Professor Willig thus projects [REDACTED] Pandora Plus subscribers in 2021, growing to [REDACTED] in 2025, a [REDACTED]. However, the financial models underlying Scenario 2 forecast suggest that Pandora [REDACTED] Pandora Plus subscribers in 2021 and [REDACTED] in 2025, roughly a [REDACTED].<sup>195</sup>

Third, Professor Willig severely overestimates the projected total number of performances on the advertising-supported service for 2021-2025. His approach has several steps, each relying on unsupported assumptions. Professor Willig defines the number of performances on the advertising-supported service as the ratio of the estimated royalties paid by Pandora for sound recordings on the that service and the estimated royalty rate per performance paid by Pandora for the years 2021 to 2025. However, Professor Willig does not have data on projected sound recording royalty payments for the advertising-supported service or the forecasted royalty rate per performance. He makes several assumption to get around these data limitations.

Scenario 2 does not have information on Pandora's projected royalty payments for sound recordings on its advertising-supported service. The data in the Proxy Statements is aggregated across all Pandora services and aggregated across sound recording and publishing royalties. Professor Willig allocates these total royalties to sound recordings and to each service with a cumbersome methodology that relies on:

- The share of revenue of each service accounted for by content costs in 2020, as estimated by a third-party investment banking and asset management firm, JMP Securities.<sup>196</sup>
- The split between royalties associated with music publishing and sound recording, which Professor Willig sets at approximately 16.7% for music publishing for the advertising-

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<sup>193</sup> Ryan WRT at ¶¶ 28-29.

<sup>194</sup> See notes to rows [62] and [63] to Exhibit D.6 of the Willig CWDT.

<sup>195</sup> Ryan WRT at ¶¶ 28-29.

<sup>196</sup> SoundExchange Exhibit 45, page 4-6.



supported service, and 14% for music publishing for the subscription services in 2021 and 15% thereafter.<sup>197</sup>

- Several “annual content adjustment factors” that Professor Willig generates so that the sum of the royalty payment across services that he estimates is equal to the total royalty payments across all services that are included in the Proxy Statement.<sup>198</sup>

In the end, Professor Willig estimates the average number of performances on the advertising-supported service between 2021 and 2025 to be [REDACTED] per year, growing from [REDACTED] in 2021 to more than [REDACTED] in 2025.<sup>199</sup> This is an [REDACTED] from 2021 to 2025.

Based on the financial models underlying Scenario 2 of the Proxy Statements, Professor Willig has substantially overestimated the projected number of performance on Pandora’s advertising-supported service during the 2021 to 2025 time period. These financial models report the total number of “Ad Hours” underlying the Scenario 2 forecasts. Assuming that the total number of music performances per hour between 2021 and 2025 is equal to the number of music performances per hour in 2018, I calculate the average annual number of performances per year between 2021 and 2025 in Scenario 2 to be [REDACTED], growing from about [REDACTED] in 2021 to [REDACTED] in 2025. This is an [REDACTED] from 2021 to 2025.

#### 4. Corrected Margins

As shown in Figures 6 and 7 in the main text, once I correct the errors in Professor Willig’s margin calculations, I find that the margins calculated using Scenario 2 data are similar to the margins I calculated in my CWDT based on the Pandora LRS P&L data.

Column 1 of Figure 6 shows the pre-royalty variable margin calculated by Professor Willig for the subscription service, which is equal to [REDACTED] of revenue or [REDACTED] per performance. Column 2 of Figure 6 shows the same margin calculated using the same Scenario 2 forecast but correcting his mistaken assumptions. The corrected margin is equal to [REDACTED] percent of revenue or [REDACTED] per performance. This figure is almost identical to the \$0.0035 per-performance rate that I estimated in my CWDT using the 2018 LRS (Table A.3 in Shapiro CWDT) and the [REDACTED] per-performance rate I estimate in Figure 6 using 2021-2024 LRS data (Column 4).

Similarly, Column 2 of Figure 7 shows that the corrected margin for the advertising-supported service calculated, again using Scenario 2 data, is [REDACTED] of revenue or [REDACTED] per performance. Not only this is significantly lower than the margin calculated by Professor Willig, \$0.0042 per performance, but it is closer to margin I calculated in my CWDT using 2018 LRS

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<sup>197</sup> The split between sound recording and music publishing royalties for the advertising-supported service in Professor Willig’s CWDT is based on Pandora’s 2017 10-K. The split between sound recording and music publishing royalties for the subscription services is based on the U.S. Copyright Royalty Judges’ Final Determination in *Phonorecords III*. See notes in Professor Willig’s backup spreadsheet (tab “D.6 Pandora Profit Rate” in SOUNDEX\_W5\_000038139.xlsx) to Exhibit D.6.

<sup>198</sup> See rows cells R27 to V27 of the backup spreadsheet (tab “D.6 Pandora Profit Rate” in SOUNDEX\_W5\_000038139.xlsx) to Exhibit D.6 of Professor Willig’s CWDT and footnote to rows [8], [11], and [14] to Exhibit D.6 of Professor Willig’s CWDT.

<sup>199</sup> See row [57] of Exhibit D.6 and backup spreadsheet (tab “D.6 Pandora Profit Rate” in SOUNDEX\_W5\_000038139.xlsx) of Professor Willig’s CWDT.

data, [REDACTED] per performance (Table A.2 in my CWDT), and the margin I calculate in Figure 7 using 2021-2024 forecasts in the LRS P&L, [REDACTED] per performance (Column 4).

### ***C. Effect on Royalty Rates of Using Pandora LRS 2021-2024 Forecasts***

Using the Pandora LRS forecast gives very similar margins during the 2021-2024 time period as the Proxy Statements. These per-performance margins are somewhat higher than the margins used in my CWDT, which used LRS actual data for 2018.

Figure C.1 shows the estimated royalty rates derived from Professor Willig's Nash-in-Nash model when using the forecasted margins for 2021-2024 from the LRS. The parameters used in this calculation are identical to those in Figure 13 of my main report, except that information on plays, margins, and fixed costs are taken from the LRS forecast rather than from the Scenario 2 forecast. The rates when majors are must-have are somewhat lower using the LRS forecast given the smaller scale of operations than was projected in Scenario 2, but the results when majors are not must-have are virtually identical to those in Figure 13.<sup>200</sup>



As shown in Figures C.2 and C.3, using forecasted margins for 2021-2024 from Pandora's LRS P&L, rather than actual margins from 2018, only minimally raises the negotiated rates in the Nash-in-Nash bargaining model used in the Shapiro CWDT.

Figure C.2 shows the results for advertising-supported webcasters. In my CWDT, I found that the margin based on the 2018 LRS P&L data implied a per-performance royalty rate for the advertising-supported service ranging between [REDACTED] and [REDACTED]. Figure C.1 shows that using the margin based on the 2021-2024 LRS P&L data increases the estimated royalty rate

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<sup>200</sup> Scale enters the bargaining model when majors are must-have because Professor Willig assumes that webcasters will shut down if they do not have content from any of the major record labels. If the webcaster shuts down, it saves its fixed costs. While fixed costs are similar in the two forecasts, fixed costs as a percentage of revenue are lower in the LRS given the smaller scale of webcaster operations. This lowers the webcaster's total cost margin from the LRS forecast, resulting in lower negotiated royalty rates with must-have record labels. When labels are not must-have, a webcaster will remain in operation even if it loses content from one major record label. Consequently, fixed costs do not enter into the negotiations and do not factor into the Nash-in-Nash bargaining solution when majors are not must-have.

range to [REDACTED] per performance. Because this range is calculated using the average margin forecasted for 2021-2024, if the Judges were to rely on it they should not also apply an inflation adjustment.

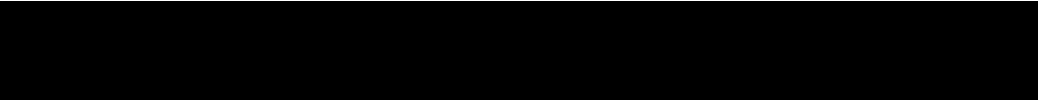
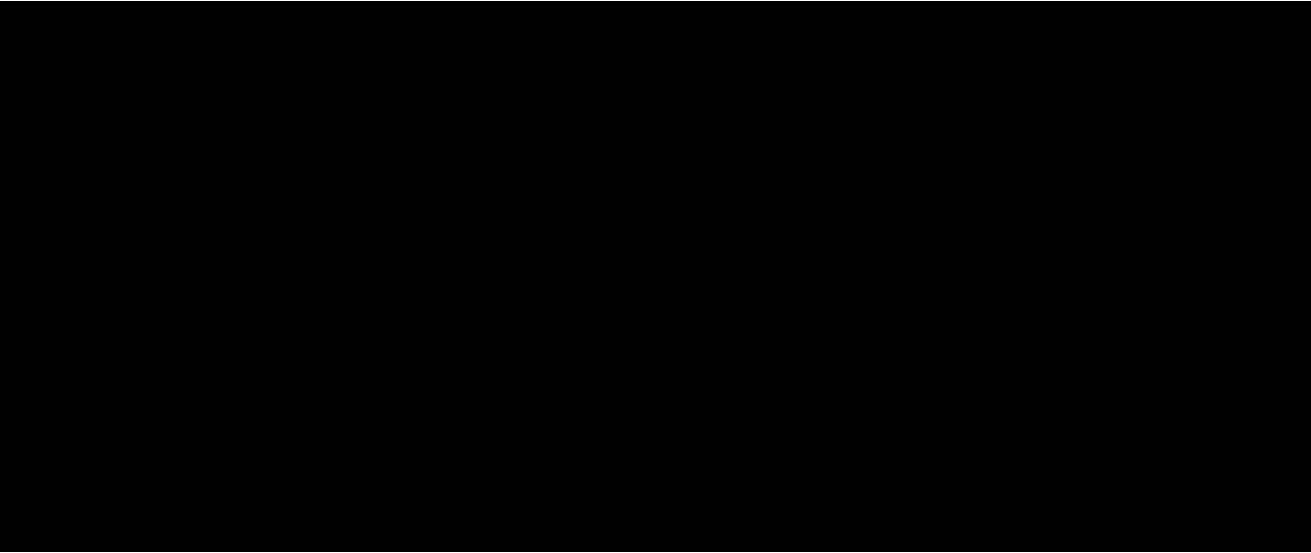
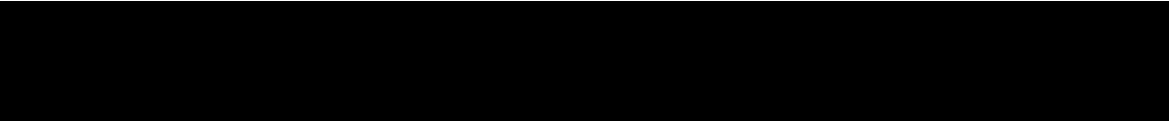


Figure C.3 repeats this exercise for subscription webcasters. Again, using the margin based on the 2021-2024 LRS data rather than the 2018 LRS data slightly increases the royalty rate range generated by the Nash-in-Nash bargaining model, from a range of [REDACTED] per performance to a range of [REDACTED] per performance. Because this range is calculated using the average margin forecasted for 2021-2024, if the Judges were to rely on it they should not also apply an inflation adjustment.





[REDACTED]

[REDACTED]

## Appendix D: Record Industry Opportunity Cost

This Appendix corrects Professor Willig’s calculations of the opportunity cost to the record industry of licensing to statutory webcasters.

Professor Willig calculates this opportunity cost by relying on the Zauberman survey to estimate the diversion rates from webcasting to alternative forms of music listening.<sup>201</sup> As a robustness check, Professor Willig then uses the “Share of Ear” survey to estimate diversion rates from webcasting to other forms of music.<sup>202</sup> In both cases Professor Willig makes errors that cause him to overestimate the opportunity cost.

In Sections A, and B, I correct Professor Willig’s opportunity cost calculations based on the Zauberman survey. I explain in detail two errors that Professor Willig made in calculating opportunity cost. I also show how to correct those errors. In Section C, I correct Professor Willig’s opportunity cost calculations based on the “Share of Ear” survey.

### A. Calculation Error for CDs, Vinyl, and MP3s

First, Professor Willig makes an error in his calculation of the “CD/Vinyl/Digital Download Royalties Per Purchaser” shown in Exhibit D.3 in the Willig CWDT. In his opportunity cost calculation, royalties paid for these forms of listening represent one source of foregone income to record companies, to the extent that listeners would substitute CDs, Vinyl, or Digital Download purchases for webcasting services.

Professor Willig first calculates the “Average Monthly Royalties per Purchaser” separately for each of CDs, Vinyl, and Digital Downloads as follows (in Row I of Exhibit D.3): [REDACTED] for CDs, [REDACTED] for Vinyl, and [REDACTED] for Digital Downloads.

Professor Willig then attempts to calculate the “Weighted Average” of these three figures (so as to measure the amount an average user would spend if she diverted from webcasting listening to these formats, which were combined into one category in the Zauberman diversion survey). To do so, he uses the retail revenues of each format (from Row G) as weights, arriving at weighted average of [REDACTED]. This is an arithmetic error, as it gives excessive weight to the spending categories with a higher royalty per purchaser. The correct procedure uses unit purchases of each format (*i.e.*, the number purchased of each format) as the weights.

To see how the arithmetic works, consider the following example. Suppose that 10 individuals buy CDs and 10 individuals buy MP3s. Suppose that each CD buyer spends \$3 per month on CDs, while each MP3 buyer spends \$9 per month on MP3s. Total retail revenues are \$30 per month for CDs (\$3 times 10 people) and \$90 per month for MP3s (\$9 times 10 people), for \$120 in total. Suppose that net royalties are 50% of retail revenue for CDs and for MP3s. Monthly royalties are thus \$15 from CDs and \$45 from MP3s, for \$60 in total, 50% of the \$120 retail revenue total. On average record companies earn \$3 per buyer per month: \$60 earned on 20 buyers. But this is not what Willig does in his CWDT. The “weighted average” monthly royalties per buyer under his method would be incorrectly calculated using the retail revenues of \$30 for

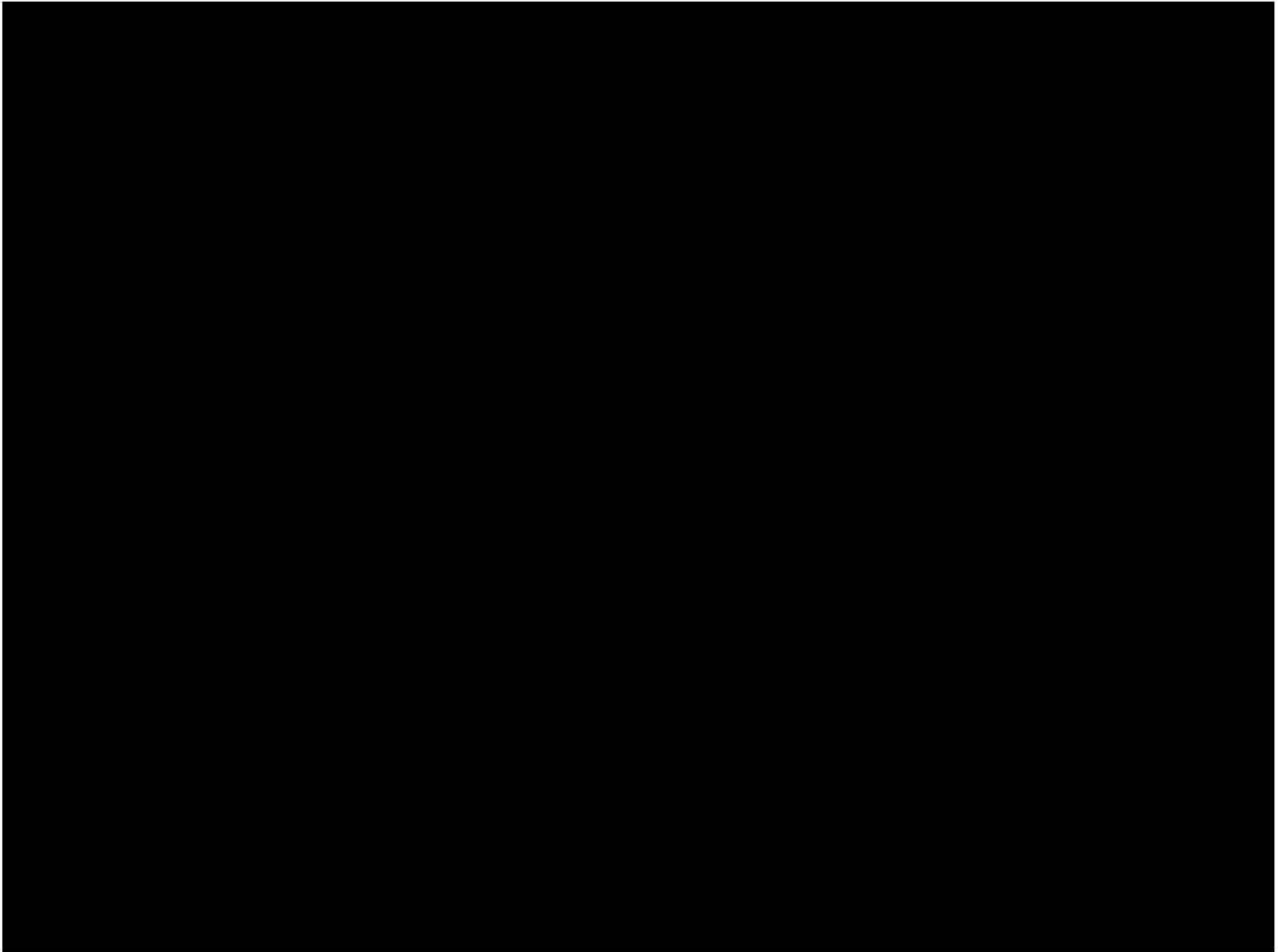
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<sup>201</sup> Willig CWDT, Appendix E.

<sup>202</sup> Willig CWDT, Appendix F.

CDs and \$90 for MP3s as the weights. This would generate a weighted average of \$3.75 ( $= (\$30 \times \$1.5 + \$90 \times \$4.5) / (\$30 + \$90)$ ).

Figure D.1 corrects this error. This corrections [REDACTED] the “Weighted Average Monthly Royalties per Purchaser” from [REDACTED] to [REDACTED]<sup>203</sup>




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<sup>203</sup> Professor Willig’s calculations in Appendix F of his CWDT confirm the error he made in Appendix D of his CWDT. In his Appendix F, Professor Willig calculates the royalty rate per performance switching to CDs, Vinyl, and MP3s to be [REDACTED] per play. In his Appendix D, Professor Willig calculates the analogous royalty rate to be [REDACTED] per buyer per month. One should be able to recover the rate calculated in Appendix F from the rate calculated in Appendix D (and vice versa) using the appropriate number of plays per buyer per month. Using Professor Willig’s data, I calculate that the average buyer of CDs/Vinyl/MP3s listens to approximately [REDACTED] performances per month, which suggests that the per performance rate implied by the figures in Appendix D is equal to [REDACTED]. This is [REDACTED] than the per performance rate derived in Appendix F, [REDACTED]. This inconsistency arises from the incorrect use of revenue weights by Professor Willig. Using the revised royalty payment per subscriber per month of [REDACTED] from Figure D.1 below, I find that the per performance royalty rate for CDs/Vinyl/MP3s implied by Appendix D is equal to [REDACTED] which is [REDACTED] to the rate that Professor Willig calculates in Appendix F. (The difference is explained by the fact that the definition of “digital products” used in Appendix D and Appendix F of the Willig CWDT are slightly different. Appendix F in the Willig excludes “Other Digital” from the calculations, while Appendix D includes “Other Digital.”)

### ***B. Overestimation of Incremental Expenditures on CDs/Vinyl/MP3s***

Second, Professor Willig overestimates the incremental expenditures that listeners would make of CDs, Vinyl, and Digital Downloads if statutory webcasting were no longer available. I correct Professor Willig's calculation of the incremental expenditures on CDs, Vinyl, and Digital Downloads in two distinct ways. First, I show that Professor Willig overestimates the amount of money that people switching away from a webcaster would spend on CDs, Vinyl, and Digital Downloads. Second, I show that Professor Willig underestimates the number of people that incrementally spend more on CDs, Vinyl, and Digital Downloads. Because the first error is more material, these two errors, taken together, cause Professor Willig to significantly overestimate the opportunity cost associated with people switching their listening hours from webcasting to CDs, Vinyl, and Digital Downloads.

Starting with the first error, Professor Willig assumes that people who stop listening to statutory webcasting services and switch *some* (but not all) of their listening to CDs, Vinyl, and Digital Downloads nonetheless will *incrementally* spend as much as the average consumer who purchases those media types (as corrected above, [REDACTED]). Professor Willig thus implicitly assumes that any given consumer either (a) buys music in these formats at the full amount that an average user pays for them in a month, or (b) if listening to webcasting instead, does not purchase these media at all. In other words, Professor Willig treats these formats like a subscription service: a user either has no subscription and pays zero, or pays the full subscription price to gain access, regardless of how much she subsequently listens.<sup>204</sup>

In reality, however, consumers choose how much or how little they listen to these media during a month, and make purchases accordingly. In other words, acquiring music as CDs, Vinyl, and Digital Downloads is more like an advertising-supported service, which generates royalties in proportion to the amount it is used, and *not* like paying a set fee for a subscription service. In computing opportunity cost, Professor Willig should have treated these media like advertising-supported services that generate additional royalties per performance.<sup>205</sup> His faulty assumption causes him to overstate the royalties from these media if a significant share of individuals would switch only a small proportion of their listening time (and thus purchases) to CDs, Vinyl, and Digital Downloads.<sup>206</sup>

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<sup>204</sup> See Willig CWDT, Appendix E, at ¶13 (“For purposes of my analysis, I estimate incremental royalties from diversion to CD/V/MP3 in the same way as for Paid-OD and SXM-Air [on demand subscriptions and satellite radio subscriptions].”)

<sup>205</sup> In *SDARS III*, when Professor Willig computed opportunity costs, he followed the correct methodology, computing the royalties from incremental purchases of CDs and digital downloads on a per-performance basis. See Willig *SDARS III* WDT at B-5, B-6 (equivalent methodology for CD/downloads and ad-supported interactive).

<sup>206</sup> As further illustration of this point, the source document used by Professor Willig shows that individuals who subscribe to an on-demand music service and who also purchase these media spend on average [REDACTED] per year on CDs [REDACTED] on downloads, and [REDACTED] on vinyl records. SoundExchange Exhibit 42 at 19. Using Professor Willig's assumptions about the percentage of revenue received as compensation for copyright holders for each of those media, the average on-demand subscriber generates [REDACTED] in monthly royalties from these media, less than one-third of the [REDACTED] amount used by Professor Willig. This demonstrates that people who use an on-demand service (as an example) do not spend nearly as much as the average music consumer on physical and digital media.



Consistent with this intuition, the Zauberman survey used by Professor Willig indicates that respondents do not expect to allocate a significant share of their diverted time to these (increasingly unpopular) alternatives if webcasting were no longer available: respondents switching away from an advertising-supported webcaster said they would allocate only 14.1% of their diverted time to CDs, Vinyl, and Digital Downloads. Individuals switching away from a subscription-based webcaster said they would allocate only 9.9% of their diverted time to CDs, Vinyl, and Digital Downloads. Professor Willig's assumption that these users would, in the absence of statutory webcasting, purchase as many CDs, Vinyl, and Digital Downloads as does the average purchaser (rather than an amount sufficient to satisfy their relatively modest listening increase) therefore significantly overstates the royalties that would be earned by record companies on diverted purchases of these media.<sup>207</sup>

A far more reasonable assumption is that people switching to CDs, Vinyl, and Digital Downloads would generate incremental royalties consistent with the proportion of time they divert from statutory webcasting to these media types. Indeed, Professor Willig in his *SDARS III* opportunity cost calculation made precisely this assumption, i.e., that incremental royalties from CDs and downloads are *proportional to incremental listening* on these media.

To illustrate, suppose that the average consumer of CDs, Vinyl, and Digital Downloads spends \$2 per month on these media types and allocates 20% of their listening time to these media types. If people switching from webcasting to these media types would allocate an *incremental* 2% of their listening time to these media types, it is reasonable to expect them to spend about 20 cents more on these media types every month (a 10 percent increase on top of the \$2 per month they were spending), not the full \$2.

The calculation illustrated in this example has three components: (1) the monthly amount spent by the average consumer on CDs, Vinyl, and Digital Downloads (\$2 in the example); (2) the incremental share of time that people switching from webcasting would allocate to CDs, Vinyl, and Digital Downloads (2% in the example); and (3) the share of music listening time spent by the average consumer on CDs, Vinyl, and Digital Downloads (20% in the example above). The "Share of Ear" survey used by Professor Willig allows me to estimate the value of these three components for people switching away from the advertising-supported and subscription webcaster in the surveys. In this manner, I can revise Professor Willig's calculations of the incremental royalties associated with CDs, Vinyl, and Digital Downloads.

First, I have already calculated the monthly amount spent by the average consumer on CDs, Vinyl, and Digital Downloads as [REDACTED].

Second, I calculate the incremental share of time that people would switch from webcasting to CDs, Vinyl, and Digital Downloads. According to the "Share of Ear" survey, Pandora's paid subscribers allocate approximately [REDACTED] of their music listening hours to streaming music

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<sup>207</sup> See Question 3 of the Zauberman survey, which asks people how they would allocate the listening time diverted away from the webcasters across different alternative media. The Zauberman survey does not ask this question of all respondents. It excludes respondents who either (1) indicate that they would not have listened to the webcaster on the same day in the following week; (2) choose only one alternative to webcasting (i.e., those who allocate 100% of their time to one alternative); or (3) did not choose a "free on-demand" service as a possible alternative to webcasting. I allocate the time of respondents who were not asked Question 3 but indicated that they would divert their time to multiple alternative media based on the allocations of similar individuals who were asked Question 3.

services.<sup>208</sup> [REDACTED] of that time is allocated specifically to Pandora.<sup>209</sup> Using this reported behavior of paid subscribers as a proxy for what listeners to the ad-supported service would report, this indicates that on average Pandora users spend [REDACTED] of their music listening hours on Pandora.<sup>210</sup> As reported above, listeners of an advertising-supported webcaster, according to the Zauberman survey, will divert on average 14.1% of their time to CDs, Vinyl, and Digital Downloads, while listeners of a subscription webcaster will divert on average 9.9% of their time to CDs, Vinyl, and Digital Downloads. The product of the share of time allocated to Pandora and the diversion rate to CDs, Vinyl, and Digital Downloads gives us the *incremental* time allocated to these media in the absence of webcasting. In particular, users of the free service will allocate an incremental [REDACTED] of their listening time to CDs, Vinyl, and Digital Downloads. Users of the subscription service will allocate an incremental [REDACTED] of their time to CDs, Vinyl, and Digital Downloads.

Third, the remaining question is how the *incremental* listening compares to the *average* listening to CDs, Vinyl, and Digital Downloads. I again use the “Share of Ear” survey, [REDACTED]

This implies that the incremental spending on CDs, Vinyl, and Digital Downloads is about [REDACTED] of the average spending on CDs, Vinyl, and Digital Downloads for people switching away from the advertising-supported webcaster, and about [REDACTED] of the average spending on CDs, Vinyl, and Digital Downloads for people switching away from the subscription webcaster.

Putting all this together, the bottom line is that in the absence of free webcasting, users’ *increased* listening to CDs, Vinyl, and Digital Downloads would constitute about [REDACTED] of the time typically spent listening those media. In the absence of subscription webcasting, it would be [REDACTED]. And their increased purchases would reasonably mirror that increase in listening, not the *total* amount spent on those media each month.

Accordingly, I have revised the incremental royalties calculated by Professor Willig for people who switch and begin listening to CDs, Vinyl, and Digital Downloads as follows:

- For the “No Free” hypothetical, the incremental royalties per buyer per month are [REDACTED]. This is significantly smaller than the royalties estimated by Professor Willig, which are [REDACTED] per buyer per month.

<sup>208</sup> SoundExchange Exhibit 44, Slide 19. Streaming services include Spotify, Pandora, etc.

<sup>209</sup> SoundExchange Exhibit 44, Slide 49.

<sup>210</sup> Unfortunately the survey [REDACTED]. However, to the extent that Pandora’s subscribers, and in particular subscribers to Pandora Premium service, are more likely to listen to streaming music on Pandora, this computation will overestimate the time spent listening to a statutory advertising-supported or subscription webcaster. Hence, it will overestimate the share of time diverted to CDs/Vinyl/MP3s and the associated component of record industry opportunity cost.

<sup>211</sup> SoundExchange Exhibit 44, Slide 16



- For the “No Paid” hypothetical, the incremental royalties per buyer per month are [REDACTED]. Again, this is [REDACTED] than the royalties estimated by Professor Willig, which are [REDACTED] per buyer per month.

This brings us to the second adjustment to Professor Willig’s numbers that is required to complete the calculation of the opportunity cost for people switching to CDs, Vinyl, and Digital Downloads. Professor Willig’s methodology does not credit any incremental royalties to consumers who *already* listen to CDs, Vinyl, and Digital Downloads, even if listening diverted from webcasters would cause them to increase their listening and purchases of these media as just discussed.<sup>212</sup> A proper analysis should reflect the royalties from incremental purchases of CDs, Vinyl, and Digital Downloads, even among consumers who were already listening some to these media (as well as to webcasters). This correction, taken in isolation, would point in the direction of increased record industry opportunity cost.

Professor Willig finds that approximately [REDACTED] of respondents to the Zauberman survey qualify as new buyers of CDs, Vinyl, and Digital Downloads. However, the Zauberman survey indicates that 69% of listeners to an advertising-supported webcaster and 67% of listeners to a subscription-based webcaster would divert some of their time to these media in the absence of webcasting. All of these users potentially generate additional royalties from physical media for the record industry. The corrected opportunity cost associated with CDs, Vinyl, and Digital Downloads therefore is the product of these listener shares (69% for the “No Free” hypothetical and 67% for the “No Paid” hypothetical) and the incremental royalties per buyer per month calculated above ([REDACTED] for the “No Free” hypothetical and [REDACTED] for the “No Paid” hypothetical).

Putting these two pieces together, Professor Willig calculated the opportunity cost associated with people switching to CDs, Vinyl, and Digital Downloads as [REDACTED] for the users of advertising-supported webcasters and [REDACTED] for the users of subscription webcasters. I have corrected these figures as explained above to [REDACTED] for the users of advertising-supported webcasters and [REDACTED] for the users of subscription webcasters. See Figure 8 in the main text.

### ***C. Overestimation of Diversion Rates to New Subscriptions and New Owned Media Purchases Using the Share of Ear Survey***

Professor Willig significantly overestimates the record industry opportunity cost when employing the “Share of Ear” survey (Q2 2019), which he uses as an alternative source for the estimated diversion rates between webcasters and other services.<sup>213</sup>

To obtain diversion ratios, Professor Willig uses “a logit demand model to estimate diversions based on shares, under the assumption that if either the ad-supported or subscription

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<sup>212</sup> Professor Willig classifies respondents in the Zauberman survey as “new” buyer of CDs, Vinyl, and Digital Downloads if they indicate both that they have not listened to CDs, Vinyl, and Digital Downloads in the previous 30 days and that they would listen to these media in case the webcaster went away. Professor Willig finds that [REDACTED] of the listeners to the advertising-supported webcasters and [REDACTED] of listeners to the subscription-based webcasters qualify as new buyers of CDs, Vinyl, and Digital Downloads. See Figure 6 in Willig CWDT.

<sup>213</sup> SOUNDEX\_W5\_000187111, tab “Diversion,” Figure F-5.



noninteractive distributors were to lose access to sound recordings, users would divert their noninteractive plays to other distributors in a way that is proportional to these distributors' current shares of listening time."<sup>214</sup> In doing so, Professor Willig implicitly assumes that diversion of listening hours to a subscription service always entails a *new* subscription, and diversion to listening to CDs, Vinyl, and Digital Downloads always entails *new* purchases of these media.

That is clearly an incorrect assumption, as demonstrated by the results of the Hanssens survey, which shows that approximately 57% of the diversion from an advertising-supported webcaster to a subscription interactive service would be toward existing subscriptions.<sup>215</sup> Diversion of listening time to existing interactive subscriptions and existing owned music does not generate incremental royalties. Professor Willig's assumption that all of this diverted listening time involves "new" subscriptions and purchases thus leads him to overestimate opportunity cost.

I adjust Professor Willig's diversion ratios using the "Share of Ear" data based on the results from the Hanssens survey regarding the relative shares of "new" vs. "existing" subscriptions and purchases of music alternatives.<sup>216</sup> For example, Professor Willig estimates that respondents would divert █████ of their listening hours to Sirius XM if advertising-supported webcasting services were to lose access to sound recordings. In the Hanssens survey, in the absence of an advertising-supported service, respondents divert 2.1% of their listening time to "new" Sirius XM subscriptions and 3.4% to "existing" Sirius XM subscriptions. This implies a relative share of 38% for "new" Sirius XM subscriptions and 62% for existing subscriptions. Using these relative shares, I calculate the diversion ratio to "new" Sirius XM subscriptions as █████ and the diversion ratio to "existing" Sirius XM subscriptions as █████. Only the █████ of listening time going to new Sirius XM subscriptions will produce incremental royalties for record labels.

Figure D.2 below reports the corrected diversion ratios to all forms of listening together with the revised record industry opportunity cost, which I calculate by plugging the updated diversion ratios into Professor Willig's model. As shown in Figure D.2, using the "Share of Ear" survey data, the record industry opportunity cost of licensing to advertising-supported webcasters is about █████ per performance, and the record industry opportunity cost of licensing to subscription webcasters is about █████ per performance. These estimates of opportunity cost are █████ than the estimates used in the Willig CWDT based on the "Share of Ear" survey, which are █████ per performance and █████ per performance respectively.<sup>217</sup>

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<sup>214</sup> Willig CWDT, Appendix F at ¶ 16

<sup>215</sup> Shapiro CWDT, Table 2.

<sup>216</sup> I use the Hanssens survey rather than the Zauberman survey because the Zauberman survey did not distinguish between diversion to new versus existing alternatives.

<sup>217</sup> Willig CWDT, Figure 10. These figures are also █████ than the record industry opportunity cost estimated in the Willig CWDT based on the Zauberman survey, which are █████ per performance and █████ per performance respectively. Willig CWDT, Figure 9.





## Appendix E: Corrected Equations in Professor Willig's Bargaining Models

### A. *Nash-in-Nash Bargaining Model*

The expression given by Professor Willig for profits for record company  $k$  when it does not reach an agreement with webcaster 1 is<sup>218</sup>

$$\pi_k\{\sim(D_1, L_k)\} = R_{2,k} + (\text{Share}_k * E) + \left(\frac{O_1}{\bar{a}_1} * \text{Share}_k * A_1^p\right) - C_k.$$

In words, the expression says that the profits for record company  $k$  when it does not reach an agreement with webcaster 1 are equal to the sum of (a) the royalties it gets from webcaster 2, (b) its natural performance share times the industry return from alternative ways of listening to music ( $E$ ), and (c) its share of the returns from plays that would have been made by webcaster 1, which are now diverted to webcaster 2 and alternative media, less the cost of producing music.

This expression assumes that webcaster 1 shuts down without a license from record company  $k$ . In other words, this expression is only accurate if record company  $k$  is “must-have” for webcaster 1. However, Professor Willig applies this same equation to the collective independent record company  $D$ , which is *not* must-have even under his assumptions. That is an error.

The correct expression for profits for record company  $k$ , if webcaster 1 does *not* shut down if it fails to negotiate a license with  $k$ , but rather loses a share of listening equal to the performance share of record company  $k$ , is given by

$$\pi_k\{\sim(D_1, L_k)\} = R_{2,k} + (\text{Share}_k * E) + \left(\frac{O_1}{\bar{a}_1} * \text{Share}_k^2 * A_1^p\right) - C_k.$$

In Professor Willig's model, this equation should have been applied to record company  $D$ . More generally, this equation should be applied to any record company that is not “must-have,” under Professor Willig's assumption for record companies that are not “must-have,” the lost share of listening is equal to the performance share.

The difference between the two equations above is that the second equation has an additional  $\text{Share}_k$  factor in the term reflecting  $k$ 's returns from plays diverted from webcaster 1 to other channels: webcaster 1 continues to operate, but loses a fraction  $\text{Share}_k$  of its plays. Of those diverted plays, record company  $k$  gets  $\text{Share}_k$  of the royalties generated through other channels.

An analogous change is required in the equation for  $\pi_k\{\sim(D_2, L_k)\}$ .

### B. *Shapley Value Model*

Professor Willig's Shapley Value model also needs to account for diversion of plays when a webcaster does not have content from all providers.<sup>219</sup> This diversion is not captured correctly in the equations described in Professor Willig's Appendix C and used in the Shapley Value model in the Willig CWDT. There are several different cases, depending on whether one or both

<sup>218</sup> Willig CWDT Appendix G at ¶14.

<sup>219</sup> See Willig CWDT at Appendix C, ¶5 (emphasis added) (“First, if only  $D_1$  is in a coalition, and if it increases the coalition's collective surplus, diversion occurs from  $D_2$  to both  $D_1$  and the outside distributors (because  $D_2$  is not operating) and from  $D_1$  to outside distributors (because  $D_1$  does not have a license to  $L_D$ 's content).”)

webcasters are in a coalition with only the major record companies. As with the corrections to the Nash-in-Nash Bargaining model, the corrections only affect the independent record company given Professor Willig's "must-have" assumption for major labels, but they apply to all record companies when the "must-have" assumption is dropped.

Appendix C of the Willig CWDT contains the following equation:

$$\begin{aligned} v[\{D_1, L_A, L_B, L_C\}] \\ = \max \left\{ (1 - \text{Share}_D) * \left[ m_1^p * \left( A_1^p + A_2^p * \frac{d_{2,1}^p}{\bar{a}_2} \right) + E + A_2^p * \frac{O_2}{\bar{a}_2} \right] \right. \\ \left. - (C_A + C_B + C_C) - F_1, v[\{L_A, L_B, L_C\}] \right\}. \end{aligned}$$

This expression omits the diversion of performances from webcaster  $D_1$  because  $D_1$  does not have a license from  $L_D$ . Based on Professor Willig's assumption that  $D_1$  would lose a share of performances equal to  $L_D$ 's natural performance share, the lost share of plays is  $\text{Share}_D$ .<sup>220</sup> The correct expression is

$$\begin{aligned} v[\{D_1, L_A, L_B, L_C\}] \\ = \max \left\{ (1 - \text{Share}_D) \right. \\ * \left[ \left( m_1^p + \text{Share}_D * \frac{O'_1}{\bar{a}_1} \right) * \left( A_1^p + A_2^p * \frac{d_{2,1}^p}{\bar{a}_2} \right) + E + A_2^p * \frac{O_2}{\bar{a}_2} \right] - (C_A + C_B + C_C) \\ \left. - F_1, v[\{L_A, L_B, L_C\}] \right\}. \end{aligned}$$

A similar correction applies when only webcaster  $D_2$  is in the coalition:

$$\begin{aligned} v[\{D_2, L_A, L_B, L_C\}] \\ = \max \left\{ (1 - \text{Share}_D) \right. \\ * \left[ \left( m_2^p + \text{Share}_D * \frac{O'_2}{\bar{a}_2} \right) * \left( A_2^p + A_1^p * \frac{d_{1,2}^p}{\bar{a}_1} \right) + E + A_1^p * \frac{O_1}{\bar{a}_1} \right] - (C_A + C_B + C_C) \\ \left. - F_2, v[\{L_A, L_B, L_C\}] \right\}. \end{aligned}$$

In the case where both webcasters are in the coalition, but the independent record company is not, the formula given in the Willig CWDT is

$$\begin{aligned} v[\{D_1, D_2, L_A, L_B, L_C\}] \\ = \max \left\{ (1 - \text{Share}_D) * [m_1^p * A_1^p + m_2^p * A_2^p + E] - (C_A + C_B + C_C) - F_1 \right. \\ \left. - F_2, v[\{D_1, L_A, L_B, L_C\}], v[\{D_2, L_A, L_B, L_C\}] \right\}. \end{aligned}$$

Again, this expression does not account for the plays diverted from each webcaster because they do not have a full complement of content. Correcting this equation requires an additional

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<sup>220</sup> Willig CWDT, Appendix C at n. 2.

assumption: I assume that customers who decrease listening at one webcaster because it is missing content will not divert to another webcaster that is missing the same content. Consequently, all diversion of listening from each webcaster is to non-webcasting options. With that assumption, the correct equation is:

$$\begin{aligned}
 &v[\{D_1, D_2, L_A, L_B, L_C\}] \\
 &= \max \left\{ (1 - \text{Share}_D) \right. \\
 &\quad \left. * \left[ \left( m_1^p + \text{Share}_D * \frac{O'_1}{\bar{a}_1} \right) * A_1^p + \left( m_2^p + \text{Share}_D * \frac{O'_2}{\bar{a}_2} \right) * A_2^p + E \right] \right. \\
 &\quad \left. - (C_A + C_B + C_C) - F_1 - F_2, v[\{D_1, L_A, L_B, L_C\}], v[\{D_2, L_A, L_B, L_C\}] \right\}.
 \end{aligned}$$

For coalitions that include all four record companies, Professor Willig's Shapley value equations incorporate the possibility that the coalition's profits will increase if the webcaster operates without content from  $L_D$ . However, the profits for this option are computed incorrectly. The expression used by Professor Willig is

$$\begin{aligned}
 &v[\{D_1, L_A, L_B, L_C, L_D\}] \\
 &= \max \left\{ \left( E + A_2^p * \frac{O_2}{\bar{a}_2} + m_1^p * \left( A_1^p + A_2^p * \frac{d_{2,1}^p}{\bar{a}_2} \right) \right) - (C_A + C_B + C_C + C_D) \right. \\
 &\quad \left. - F_1, v[\{D_1, L_A, L_B, L_C\}] + v[\{L_D\}], v[\{L_A, L_B, L_C, L_D\}] \right\}.
 \end{aligned}$$

The term  $v[\{D_1, L_A, L_B, L_C\}] + v[\{L_D\}]$  indicates that if the webcaster operates with only the majors, the independent record company will earn the same royalties,  $v[\{L_D\}]$ , as when no record companies are operating. But that is incorrect, since some listening that would have generated royalties for  $L_D$  on other media when no webcasters are operating instead go to webcaster listening that generates no royalties for  $L_D$ . The correct expression is

$$\begin{aligned}
 &v[\{D_1, L_A, L_B, L_C, L_D\}] \\
 &= \max \left\{ \left( E + A_2^p * \frac{O_2}{\bar{a}_2} + m_1^p * \left( A_1^p + A_2^p * \frac{d_{2,1}^p}{\bar{a}_2} \right) \right) - (C_A + C_B + C_C + C_D) \right. \\
 &\quad \left. - F_1, v[\{D_1, L_A, L_B, L_C\}] + \text{Share}_D \right. \\
 &\quad \left. * \left( E + A_2^p * \frac{O_2}{\bar{a}_2} + \text{Share}_D * \left( A_1^p + A_2^p * \frac{d_{2,1}^p}{\bar{a}_2} \right) * \frac{O'_1}{\bar{a}_1} \right) - C_D, v[\{L_A, L_B, L_C, L_D\}] \right\}.
 \end{aligned}$$

The expression when only  $D_2$  is in the coalition with all the record companies is similar:

$$\begin{aligned}
& v[\{D_2, L_A, L_B, L_C, L_D\}] \\
&= \max \left\{ \left( E + A_1^p * \frac{O_1}{\bar{a}_1} + m_2^p * \left( A_2^p + A_1^p * \frac{d_{1,2}^p}{\bar{a}_1} \right) \right) - (C_A + C_B + C_C + C_D) \right. \\
&\quad \left. - F_2, v[\{D_2, L_A, L_B, L_C\}] + \text{Share}_D \right. \\
&\quad \left. * \left( E + A_1^p * \frac{O_1}{\bar{a}_1} + \text{Share}_D * \left( A_2^p + A_1^p * \frac{d_{1,2}^p}{\bar{a}_1} \right) * \frac{O'_2}{\bar{a}_2} \right) - C_D, v[\{L_A, L_B, L_C, L_D\}] \right\}.
\end{aligned}$$

Finally, when all players are in the coalition, Professor Willig's expression for the returns to the coalition again recognizes that value may be maximized when one of the webcasters does not operate and/or when content from independent record companies is not played by one or both of the webcasters. Of the six possible cases, the one in which both webcasters operate without independent content is incorrectly specified. Professor Willig assigns this case a total return of  $v[\{D_1, D_2, L_A, L_B, L_C\}] + v[\{L_D\}]$ , but the correct expression is:

$$v[\{D_1, D_2, L_A, L_B, L_C\}] + \text{Share}_D * E + (\text{Share}_D)^2 * \left( A_1^p * \frac{O'_1}{\bar{a}_1} + A_2^p * \frac{O'_2}{\bar{a}_2} \right) - C_D.$$



## Appendix F: Myerson Value is Superior Here to Shapley Value

The Shapley Value model implemented by Professor Willig does not reflect the adverse impact (negative externality) on a record company when a webcaster operates with music from other record companies but not that record company.

This limitation of Shapley Value has been recognized at least since the seminal 1977 paper of Roger Myerson.<sup>221</sup> That paper generalizes Shapley Value, which is defined on games in characteristic function form, to games in partition function form, which allows the returns to all players to vary depending on the coalitions formed by other players.

The distinction between Shapley Value and Myerson Value can be demonstrated using the patent example from the Willig CWDT, ¶¶18-23, in which a device manufacturer, *D*, needs licenses from two patent holders, *A* and *B*, in order to make a device. That model assumes (a) that each patent holder licenses to various device makers other than *D*, (b) that *D* will only manufacture its product if it has a license from both patent holders, and (c) that sales by *D* cannibalize some of the other sales from manufacturers that separately license from patent holders *A* and *B*.

Professor Willig solves for the Shapley Value for *D* in this bargaining game in ¶21 of his CWDT. Algebraically, the solution can be expressed as follows: Let  $V(\{ABD\})$  be the total value of the coalition with patent holders *A* and *B* and device maker *D* all participating; that value is 22 in the example. Let  $V(\{AD\})$  be the returns to the coalition of *A* and *D* only, which is the outside opportunity for *A*, or 5 in the example. The values of  $V(\{BD\})$ ,  $V(\{A\})$ , and  $V(\{B\})$  are defined similarly, and all are equal to 5, while  $V(\{AB\})$  is the outside opportunity of both patent holders, which is 10. The Shapley Value for *D* is then given by

$$\begin{aligned} SV_D &= \frac{1}{3}(V(\{ABD\}) - V(\{AB\})) + \frac{1}{6}(V(\{AD\}) - V(\{A\})) + \frac{1}{6}(V(\{BD\}) - V(\{B\})) \\ &= \frac{1}{3}(22 - 10) + \frac{1}{6}(0) + \frac{1}{6}(0) = 4 \end{aligned}$$

To compute the Myerson Value of this bargaining game, we need to refine the algebraic notation slightly.  $V(\{A\})$  in the Shapley Value model is defined as the return to *A* from its outside opportunity assuming that *B* and *D* do not form a separate coalition. But one could also consider the return to *A* when *B* and *D* do form a coalition. To distinguish these, let the return to *A* when there are no agreements among the players be  $V(\{A\}, \{B\}, \{D\})$ , and let the return to *A* when *B* and *D* form a coalition be  $V(\{A\}, \{BD\})$ . Using this notation, the Shapley Value is<sup>222</sup>

$$\begin{aligned} SV_D &= \frac{1}{3}(V(\{ABD\}) - V(\{AB\})) + \frac{1}{6}(V(\{AD\}) - V(\{A\}, \{B\}, \{D\})) \\ &\quad + \frac{1}{6}(V(\{BD\}) - V(\{B\}, \{A\}, \{D\})). \end{aligned}$$

<sup>221</sup> Roger B. Myerson, “Value of Games in Partition Function Form,” 6 *International Journal of Game Theory* 23 (1977).

<sup>222</sup> The assumption made in the Shapley Value calculation is that when *B* is the only player in the coalition, its returns are those when *D* and *A* do not form a coalition. However, one could alternatively assume that the returns to *B* by itself are the returns when *D* and *A* do form a separate coalition. See Myerson (1977) at 27.

The general formula for Myerson Value is given in Myerson (1977). Applied to this game, the Myerson Value for  $D$  is

$$\begin{aligned} MV_D = & \frac{1}{3}(V(\{ABD\}) - V(\{AB\})) + \frac{1}{6}(V(\{AD\}) - V(\{A\}, \{B\}\{D\})) \\ & + \frac{1}{6}(V(\{BD\}) - V(\{B\}, \{A\}\{D\})) + \frac{1}{3}(V(\{A\}, \{B\}\{D\}) - V(\{A\}, \{BD\})) \\ & + \frac{1}{3}(V(\{B\}, \{A\}\{D\}) - V(\{B\}, \{AD\})). \end{aligned}$$

In this example, the first three terms of the Myerson Value formula are the same as the Shapley Value formula. But the Myerson Value has two additional terms. The first depends on the difference between the value to  $A$  when the other players do not form a coalition and when they do, which is the externality on  $A$  when the other players form a coalition. The second additional term is the corresponding externality on  $B$ . In Professor Willig's example,  $V(\{B\}, \{A\}\{D\}) = V(\{B\}, \{AD\})$ ; each patent holder gets the same outside opportunity regardless of whether the other players try to form a coalition. Therefore, these additional terms are zero, and the Myerson Value is equal to the Shapley Value.

Now consider a variation of this patent example: suppose instead that  $D$  is able to make a device with a license from  $A$  *or* with a license from  $B$ . Assume that  $D$  gets revenue of 5 from this product, pays the outside opportunity value to the patent holder (whether  $A$  or  $B$ ) and thus obtains profit of zero. However, when  $D$  licenses only from  $A$ , that cannibalizes some of the sales that  $B$  would otherwise get, so the return to  $B$  when  $A$  licenses  $D$  is 3 rather than 5, the same as the outside license revenues for  $B$  when both  $A$  and  $B$  license  $D$ . That is,  $V(\{B\}, \{AD\}) = 3$ . Similarly, assume that  $V(\{A\}, \{BD\}) = 3$ .

The Shapley Value of the revised game is unchanged, since  $V(\{B\}, \{AD\})$ , the returns to  $B$  when  $A$  and  $D$  form a coalition, do not enter into the formula for the Shapley Value for  $D$ . The change does affect the Myerson Value, however, which in the alternative game is

$$\frac{1}{3}(22 - 10) + \frac{1}{6}(0) + \frac{1}{6}(0) + \frac{1}{3}(5 - 3) + \frac{1}{3}(5 - 3) = 5\frac{1}{3}.$$

Turning to the webcaster bargaining game, the willingness of a record company to enter into an agreement with a webcaster naturally depends on the total royalties the record company will receive from all media when other record companies license the webcaster. The more that webcaster operations divert listening from other media, the greater the cost to a holdout record company, making that record company more willing to agree to license the webcaster, even at a lower royalty rate. Thus, for a bargaining model to reflect the key elements that factor into negotiated webcaster royalties, it should account for the negative impact of one record company when other record companies license webcasters. As shown above in the patent example, the Shapley Value does not factor in these negative contracting externalities. For that reason, Myerson Value, which does incorporate contracting externalities, is superior to Shapley Value in the current setting.

Professor Willig's Nash-in-Nash Bargaining model *does* capture these negative contracting externalities. In this respect, the Nash-in-Nash Bargaining model, like the Myerson Value model, is a suitable methodology for modeling webcaster bargaining outcomes. Two recent papers have shown that the Myerson Value solution is identical to the result from a variant of the Nash-in-

Nash model that makes a different assumption about the royalty rates the two parties in one negotiation expect from other negotiations if the two are unable to reach an agreement.<sup>223</sup>

To see how the Nash-in-Nash Bargaining model captures negative contracting externalities, consider the Nash-in-Nash Bargaining solution to Professor Willig's patent example. Starting with the game as described in the Willig CWDT, the return to *D* from reaching a license agreement with *B* with royalty *b*, assuming it already has an agreement with *A* at royalty *a*, is  $16 - a - b$ , while *D* gets zero without an agreement from *B*. Thus *D*'s gains from trade are  $16 - a - b$ . If *B* reaches an agreement with *D* (assuming *D* already has an agreement with *A*), *B* receives a royalty payment from *D* plus its (reduced) outside opportunity, or  $b + 3$ , while failing to reach an agreement means that *D* does not operate and *B* gets the full outside opportunity, which is 5. Thus *B*'s gains from trade are  $b + 3 - 5 = b - 2$ . The values of *a* and *b* that equate the gains from trade (taking advantage of the fact that  $a = b$  in equilibrium) solve the equation  $16 - 2b = b - 2$ , which implies that  $a = b = 6$ . After paying 6 to each license holder, *D* receives net value of  $16 - 12 = 4$ , the same as the Shapley Value and Myerson Value solutions.

Turning to the revised game as described above, the gains from trade for *D* are unchanged (since it continues to receive profit of zero if it signs a license with only one patent holder.) However, for *B* the returns if it does not reach an agreement with *D* are equal to 3, since the agreement between *D* and *A* is assumed to cannibalize some of the outside sales of *B*'s licensees. Therefore *B*'s gains from trade are now  $b + 3 - 3 = b$ . The Nash-in-Nash Bargaining solution now satisfies  $16 - 2b = b$ , so  $a = b = 16/3$ , and *D* gets a net return of  $16 - 2 \times \left(\frac{16}{3}\right) = 5\frac{1}{3}$ . Because of the negative externality on the other patent holder when only one of *A* and *B* reaches agreement with *D*, the bargaining position of each patent holder is weakened, so *D* pays lower royalties and receives a higher payoff. The Nash-in-Nash Bargaining solution in the revised game coincides with the Myerson Value of the revised game, but not the Shapley Value.

The Willig CWDT models webcaster negotiations as a six player game: one advertising-supported webcaster, one subscription webcaster, three majors record companies, and a single entity representing all independent record companies. This structure introduces a number of complications when considering coalitions of subsets of players, particularly when the "must-have" assumption for major record companies is removed.<sup>224</sup> To simplify the computation of the returns to different subsets of players, I have simplified the structure of the bargaining environment by using a structure similar to the one used in my CWDT: advertising-supported webcaster negotiations are modeled separately from subscription webcaster negotiations. Since

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<sup>223</sup> In Nash-in-Nash, the parties make "Nash Conjectures:" the rates from other negotiations are taken as fixed. In the alternative formulation, each bilateral negotiation proceeds under the assumption that if the negotiation fails, all other deals will be renegotiated knowing that the first deal has not been reached. The renegotiations use the same assumption iteratively, so that there is an assumption of recursive renegotiation if bargaining on one bilateral deal breaks down. Froeb *et al.* refer to this model as Nash-in-Shapley, while Waehrer and Yu refer to the model as recursive Nash-in-Nash Bargaining. Luke M. Froeb, Vladimir Mares, and Steven T. Tschantz, "Nash-in-Shapley: Bilateral Bargaining with Recursive Threat Points" (June 2019), available at SSRN: <https://ssrn.com/abstract=3304179>; Xiaowei Yu and Keith Waehrer, "Recursive Nash-in-Nash Bargaining Solution" (January 2018), available at SSRN: <https://ssrn.com/abstract=3319517>.

<sup>224</sup> For example, there is the possibility of multiple downstream equilibria if each webcaster will only profitably operate when the other webcaster is not operating and diverts additional plays to the other webcaster. The model also requires additional assumptions about diversion between webcasters when neither has a full complement of record company content.

the royalty from each type of webcaster impacts the opportunity cost from the other type of webcaster, I solve these two bargaining games simultaneously, following the Nash-in-Nash methodology. In other words, each of the two bargaining games is in an equilibrium, given the royalty rate prevailing in the other game. This simplified structure is used to compute Myerson Values and Shapley Value as reported in Section III.D.2.

Figure F.1 shows that this simplification does not have a material impact on the results. The figure shows that the Shapley Value of the simplified model that I use is very close to the Shapley Value in of Professor Willig's model.

**Figure F.1: Willig Shapley Value Model vs. Simplified Shapley Value Model**

	Willig Model		Simplified Model	
	Ad-Supported	Subscription	Ad-Supported	Subscription
Majors are Must-Have	\$0.00296	\$0.00311	\$0.00295	\$0.00307
No Must-Have Record Companies	\$0.00287	\$0.00300	\$0.00286	\$0.00293

**Notes:**

[1] Errors in Willig CWDT equations are corrected

[2] Parameters for revenues, costs, plays and opportunity costs from the Willig CWDT



**Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
Washington, D.C.**

**In the Matter of**

**DETERMINATION OF RATES AND TERMS  
FOR DIGITAL PERFORMANCE OF SOUND  
RECORDINGS AND MAKING OF  
EPHEMERAL COPIES TO FACILITATE  
PERFORMANCES (WEB V)**

**Docket No. 19-CRB-0005-WR  
(2021-2025)**

**DECLARATION OF CARL SHAPIRO**

I, Carl Shapiro, declare under penalty of perjury that the statements contained in my Written Rebuttal Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief.

Executed this 10th day of January, 2020 in Berkeley, California.

A handwritten signature in blue ink that reads "Carl Shapiro". The signature is written in a cursive style with a horizontal line extending from the end of the name.

Carl Shapiro

**N Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
Washington, D.C.**

**In the Matter of**

**DETERMINATION OF RATES AND TERMS  
FOR DIGITAL PERFORMANCE OF SOUND  
RECORDINGS AND MAKING OF  
EPHEMERAL COPIES TO FACILITATE  
PERFORMANCES (WEB V)**

**Docket No. 19–CRB–0005–WR  
(2021–2025)**

**WRITTEN REBUTTAL TESTIMONY OF DAVID REILEY  
(On behalf of Pandora Media, LLC)**

**Introduction**

1. My name is David Reiley. I am a Principal Scientist at Pandora Media, LLC (together with its predecessor Pandora Media, Inc., “Pandora” or “the Company”). I have served in that role since I joined the Company in February 2015. I provided testimony during the direct phase of this proceeding, where I summarized my work and academic background, my job duties as a Principal Scientist at Pandora, and the types of inquiries that I and my data science colleagues perform at Pandora.<sup>1</sup>

2. I offer this rebuttal testimony to address issues raised in the Corrected Written Direct Testimony of SoundExchange witness Professor Robert Willig. In his Corrected Written Direct Testimony, Professor Willig makes the assumption that major labels are “must have” providers for non-interactive statutory services like Pandora. *See* Written Direct Testimony of Robert Willig at ¶ 31. As I understand it, Professor Willig’s opportunity cost models assume that absent the catalog of any one of the major record companies, a non-interactive statutory service would lose so many listeners that it would need to shut down.

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<sup>1</sup> *See* ¶¶ 5-10 of my Corrected Written Direct Testimony.

3. The written rebuttal testimony of Carl Shapiro addresses Professor Willig’s opportunity cost model in depth, including the assertion that each major label is a “must-have” for non-interactive statutory services. In connection with his rebuttal testimony on that point, Professor Shapiro requested that I report the current results of certain “Label Suppression Experiments” that have been running at Pandora since early June 2019. As I explain below, in those experiments, for each of five treatment groups of Pandora listeners, we have suppressed the music of a particular record company [REDACTED] [REDACTED] and measured the impact on listener hours and other listener metrics of suppressing that repertoire.

4. This rebuttal testimony reports the results of the Label Suppression Experiments for the six-month period from June 4, 2019, through December 4, 2019. The results demonstrate only a small amount of lost listening as a result of the suppression—far from the impact that Professor Willig assumes in his direct testimony.

### **The Design of the Label Suppression Experiments<sup>2</sup>**

5. The Label Suppression Experiments attempt to answer the following question: “What effect, if any, there would be on users’ listening if Pandora stopped playing the entire catalog of a particular record company<sup>3</sup> on Pandora’s ad-supported service?”

6. The Label Suppression Experiments consist of five experimental treatments, with each experiment suppressing the music from the distributed catalog of a particular record

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<sup>2</sup> The design of the experiments was previously described in my Corrected Written Direct Testimony, *see* Reiley CWDT ¶¶ 11-20, but I include it again here for completeness and ease of reference.

<sup>3</sup> For each record company in the experimental treatment groups, we suppressed the content delivered by the labels owned or distributed by that record company (*i.e.*, the content we would expect to access through a licensing arrangement with [REDACTED] etc.).

company from Pandora's ad-supported listening tier as completely as possible.<sup>4</sup> Two of the experimental treatments are suppressing music distributed by [REDACTED]

[REDACTED] and three suppressed music from [REDACTED]

[REDACTED] The experiments, which have been running since June 4, 2019, are being conducted among listeners of our free, ad-supported service and do not affect the listening experience for the subscribers to our Pandora Plus or Pandora Premium services.

7. The concept of the experiments is simple: whenever Pandora's standard radio algorithms select and seek to perform a song in the catalog of the record company subject to the experiment for a listener in the treatment group, that song is suppressed, and the next song queued is played instead. The suppressions include situations where a listener "seeds" a Pandora station with a given artist: *e.g.*, if a user in the [REDACTED] treatment group creates a [REDACTED] station [REDACTED] she will not hear any [REDACTED] tracks from any of his [REDACTED] recordings.

8. This testimony describes the results of the Label Suppression Experiments over a six-month period (from June 4 to December 4, 2019). The treatment groups for the [REDACTED] [REDACTED] each include 1% of Pandora's free-tier listeners (approximately 880,000 listeners each), and the treatment groups for the [REDACTED] [REDACTED] each have 0.02% of listeners (approximately 18,000 listeners each).

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<sup>4</sup> We determined the record company ownership of the tracks performed or suppressed for the treatment groups based on the information provided to Pandora by each record label pursuant to the direct license agreements with each of these companies. In accordance with each such license agreement, each applicable record company delivers to Pandora, on a regular basis, a data feed identifying (with thorough metadata) the recordings covered by their licenses. This data is ingested and updated by Pandora in the ordinary course of its business. We create a "provider" identifier for each track in the Pandora system that has been provided through a data feed from one of these companies.



9. With the selected sample sizes, our statistical power provides an 80% probability of detecting a statistically significant change in listening hours, relative to control, if the true change were 4% in the [REDACTED] suppression treatments, or if the true change were 0.7% in the [REDACTED] suppression treatments. These calculations take into account the variation we see in listening hours across listeners, the proposed size of the control group (approximately one million listeners), as well as the size of each treatment group. Stated another way, we have enough statistical power to produce 95% confidence intervals for the effect on listening hours that are no wider than  $\pm 5\%$  for [REDACTED], and no wider than  $\pm 0.5\%$  for [REDACTED].

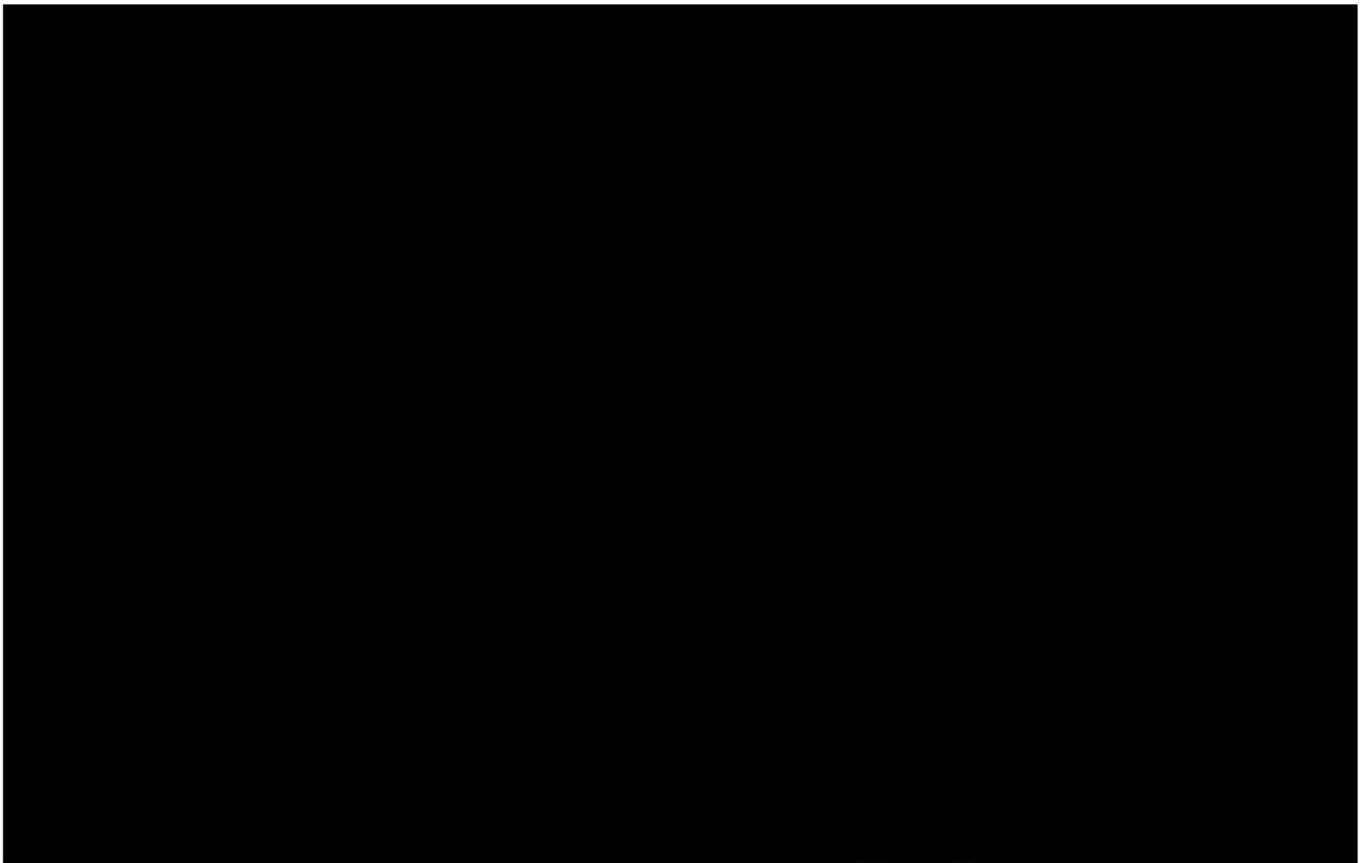
10. After suppressing the music of a given record company in each treatment group, we can then compare the listening patterns of users in these treatment groups to that of the control group of users who do not experience any music suppression. Our primary outcome metric is a standard one for Pandora: namely, average hours listened per registered user. A secondary output metric is the probability of a listener being active at all on Pandora. We have also examined several other listener engagement metrics: station changes (*i.e.*, how frequently the user changes to another station), completed tracks (*i.e.*, how regularly did the user listen through to the end of songs), skips, and “thumbs down” per track listened.

11. We typically compute experimental results over either a 7-day or a 28-day period, depending on the amount of statistical uncertainty. For the Label Suppression Experiments described herein, we have computed treatment effects for outcomes over the final 28 days of treatment: November 7, 2019 to December 4, 2019.



**Results of the Label Suppression Experiments**

12. The results of the six-month Label Suppression Experiments show [REDACTED] [REDACTED] in listener retention metrics for any of the five music-suppression treatment groups, relative to the control group. The results of the music suppression treatments on listening hours and number of monthly active users are displayed in Figure 1 below, with dots indicating the point estimates, and horizontal lines indicating the widths of our 95% confidence intervals:

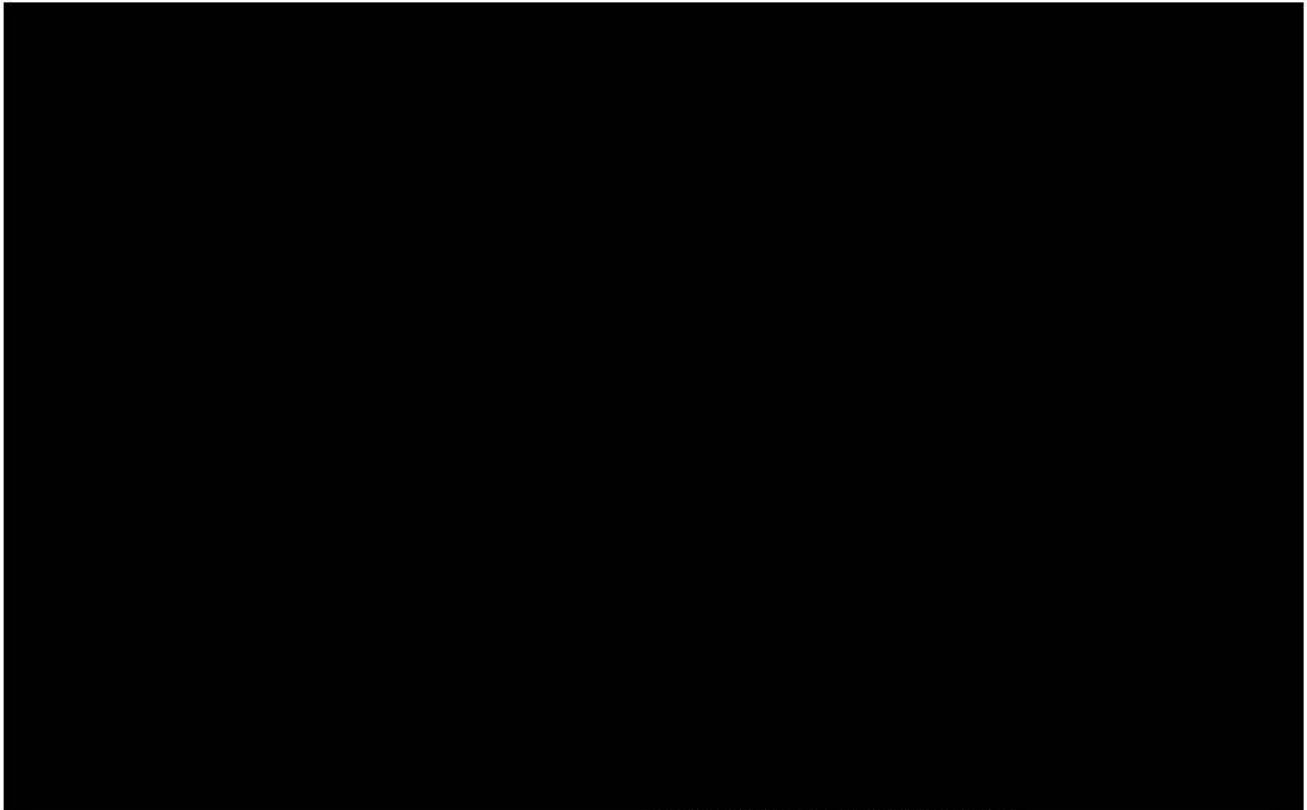


13. The largest listener-hour impact we see is in the [REDACTED] treatment, which shows a change in listener hours of only [REDACTED] as compared to the control group. The six-month results show an even smaller change in [REDACTED] listening hours of [REDACTED] as compared to the control group. The suppression of music from [REDACTED]

—show the smallest effects on users’ listening hours: and respectively. Our 95% confidence intervals are sufficiently wide that none of these estimates

14. The six-month results for the impact of label suppression on the probability of a user listening to Pandora’s ad-supported tier at all in the 28-day period ending December 4, 2019 show in the probability of listening for any of the treatment groups. The largest percentage difference between the treatment and control groups for any usage in the 28-day period is for which shows a difference. Overall, the results show a in total hours of listening due to the suppression treatment and in the number of active listeners.

15. The six-month results for the other listener engagement metrics we examined (station changes, completed tracks, skips, and thumbs down per track listened), are displayed in Figure 2 below:



Confidence intervals for percentage lift

The six-month results demonstrate [REDACTED] for any of the twenty performance metrics.

16. In sum, after six months of suppression, we do not see any [REDACTED] in aggregate user listening hours or the likelihood that a user will stop using the service, and we observe [REDACTED] in thumbing and track-skipping behaviors. In other words, even after six months, a near-total suppression of spins of any single record company [REDACTED] in the number of listeners on Pandora's ad-supported tier or the number of hours they spend listening to the service.

#### **Suppressed Label Spins**

17. The Label Suppression Experiments have successfully suppressed nearly all the music from the record labels in the various treatment groups, with only a very small number of total spins in any given treatment groups representing plays of the suppressed label. In the



paragraphs that follow, I quantify the small percentage of plays that escaped suppression and provide the reasons.

18. *Premium Access Sessions.* Listeners to Pandora’s ad-supported service are provided with the opportunity to access on-demand plays of certain directly licensed sound recordings via temporary “Premium Access” sessions in exchange for engaging with additional video ads. Those interactive plays in the Premium Access sessions fall outside the statutory license. We intentionally have not suppressed music played in that feature or in the tracks that “auto-play” in a Premium Access session after an on-demand spin as part of the Label Suppression Experiments. We *are* suppressing spins of the treatment label occurring in radio mode during a Premium Access session. As a result of this approach, a very small percentage of the spins in our treatment groups comprise (on-demand and auto-play) Premium Access spins of the suppressed labels: [REDACTED], measured as a fraction of all spins to these listeners during the period of the experiment.<sup>5</sup>

19. *Premium and Plus Upgrades.* We also observe that a small number of users in the treatment groups upgrade to Pandora Plus or Pandora Premium during the course of the experiment, after which point they no longer received the treatment suppression and thus were exposed to some plays of the suppressed label. Similarly, some listeners’ Pandora Plus or

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<sup>5</sup> We [REDACTED] in Premium Access sessions between treatment and control, with the exception of the [REDACTED] treatment group, where we saw a [REDACTED] in Premium Access sessions as compared to control, which is [REDACTED] at the 5% level. In addition, the number of on-demand Premium Access spins of suppressed-label content shows [REDACTED]. For example, for the [REDACTED] treatment group, we see [REDACTED] content representing 36.86% of on-demand Premium Access spins in treatment, versus 36.70% of on-demand Premium Access spins in control. Thus, it does not appear that users reacted to the suppression by [REDACTED] Premium Access sessions or plays of the suppressed label within those sessions.

Premium subscriptions expired midway through the treatment, and when they returned to ad-supported listening they begin receiving treatment. Although listeners who upgraded to Pandora Plus or Premium no longer received treatment after subscribing (and thus could hear plays of the suppressed label), I have not excluded those listeners or their listening metrics from the analysis because they did receive at least partial treatment *prior* to the upgrade, and their decision to upgrade (unlike those in the control group) could have been influenced by the suppression. These “upgraded” users have received the following small number of plays of the suppressed-label’s content after upgrading to a subscription tier: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] (all measured over the full six-month treatment period).

20. *System Upgrades and Technical Suppression Errors.* Users in the treatment groups have been exposed to a small number of additional spins from the suppressed record company as the result of occasional technical issues arising from the operation of Pandora’s systems. I previously reported that, between June 13-16, 2019, Pandora rolled out a new “Preferred Version” system, and that on June 26, 2019, in the course of another system software upgrade, Pandora inadvertently reverted to an older, pre-experiment version of its software code, which caused the experiment to be disabled for several hours until the version was corrected. I have also explained that routine changes and updates in ownership information for recordings in our rights-management system from the rights owners can sometimes take several hours or more to propagate to the system that actually chooses tracks to play, resulting in certain performances we now recognize as being in the catalog of the suppressed record company provider not being suppressed at the time the performance was made. During the six-month period since the



experiments launched on June 4, 2019, such technical issues led to the following quantity of suppressed-label spins: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED].<sup>6</sup>

21. *Miscellaneous Provider Spins.* Last, listeners in our suppression treatment groups have been exposed to spins of tracks in our system that are not attributed to any individual music provider based on the data feeds we receive from the record companies with whom we have licenses. We assign these tracks a “miscellaneous” provider ID. We do not know or have reason to believe that any meaningful proportion of these “miscellaneous provider” tracks are actually tracks that should be associated with the suppressed record companies; indeed, since signing direct license agreements with various record companies Pandora personnel have engaged in an extensive effort to match these legacy tracks and their associated data to the tracks provided by the DDEX feeds of our record company suppliers, so that when our radio algorithms call for a particular track to be spun, we play the label-supplied version rather than the legacy version.<sup>7</sup>

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<sup>6</sup> For the period Sept. 1, 2019, to December 4, 2019, the inadvertent spins of the suppressed labels on account of these technical anomalies were truly insignificant, representing [REDACTED]

<sup>7</sup> My Corrected Written Direct Testimony contains a more detailed recounting of this process. As I explained there, Pandora has used a combination of machine learning and human curation in order to create these matches, and we have engaged in a continuous process of improvement ever since we began receiving direct feeds from the record labels. We matched the legacy tracks to the DDEX tracks by comparing metadata and by using machine comparisons of the audio files (audio fingerprinting) to group different tracks in our system together under the same “song identity.” See Reiley CWDT ¶ 28 & n.8.

22. Nonetheless, we have noticed a modest increase in spins of these legacy “miscellaneous provider” tracks (*i.e.*, tracks we have not, as yet, matched to a licensed track) in our [REDACTED] treatment groups relative to the proportional increase we might have expected after suppressing the tracks of the [REDACTED]. This raises at least the theoretical possibility that some of these “miscellaneous provider” tracks might be tracks licensed by the suppressed label that our processes have not yet matched to the licensed copy.

23. To estimate the incidence of suppressed-label tracks in the “miscellaneous provider” pool, I apply the results of a review of two random samples of these “miscellaneous provider” tracks—60 played in the [REDACTED] suppression treatment and 60 played in the [REDACTED] suppression treatment—conducted by two Pandora curators. As I have previously described, for each track in each random sample (drawn from tracks performed on August 1, 2019), our curators attempted to match the “miscellaneous provider” track to tracks in the DDEX feeds we receive from [REDACTED]—*i.e.*, the database of tracks those same companies provide to us to perform on our service under our license agreements with them. In the [REDACTED] treatment group, that analysis identified six out of the 60 “miscellaneous provider” tracks examined (10%) that appear to match tracks provided in the [REDACTED] DDEX feed and covered by our [REDACTED] license (and thus should have been suppressed and identified by [REDACTED] as licensed recordings). In the [REDACTED] suppression group, they identified nine out of 60 tracks (15%) that appear to match tracks provided in the [REDACTED] DDEX feed covered by our [REDACTED] license.<sup>8</sup> Because the “miscellaneous provider” performances represented approximately 5.55% of total performances in the [REDACTED] suppression group, I estimate that  $0.56\% \pm 0.5\%$  of the total spins (10% of 5.55%) were [REDACTED] tracks unsuppressed because of this matching issue. For the [REDACTED] suppression group, where

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<sup>8</sup> Factoring in statistical uncertainty around these estimates, the percentages would be [REDACTED]



“miscellaneous provider” performances represented approximately 7.75% of total performances, I estimate that  $1.16\% \pm 0.8\%$  of total spins (15% of 7.75%) were [REDACTED] tracks unsuppressed because of this matching issue.

24. To summarize the foregoing, taking [REDACTED] as an example, about 1.46% of total spins in the [REDACTED] treatment group (as compared to 34.7% in the control) constituted unintended spins of the suppressed provider: 0.30% on account of inadvertent technical issues (paragraph 20 above) and 1.16% from the pool of “miscellaneous provider” tracks (paragraph 23 above).<sup>9</sup> In addition, an estimated 1.15% of spins constituted [REDACTED] tracks delivered on-demand or via auto-play to listeners in Premium Access mode (which we did not attempt to suppress, per paragraph 18 above), and 1.61% of spins constituted [REDACTED] tracks delivered to users who upgraded to a subscription tier mid-experiment (and did not experience suppression, per paragraph 19 above).

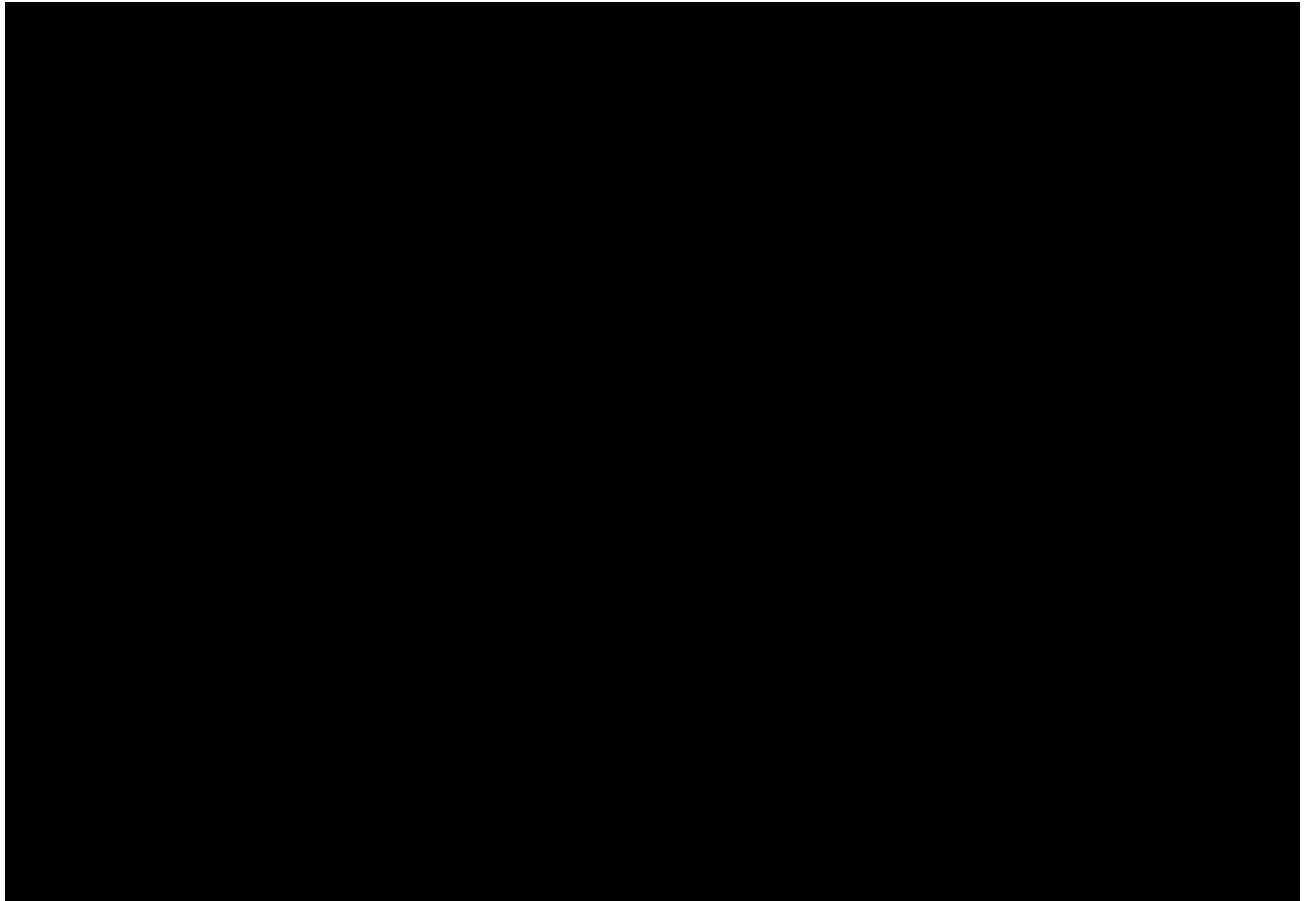
25. Though we were unable to suppress every single spin from the suppressed labels, the near-total suppression we did achieve provides more than sufficient information to answer the key question of interest here: whether Pandora would lose large amounts of listening if the catalog of a major record label were to be entirely removed from our service. Even absent a total suppression, there is simply no good reason to believe that, had we managed to suppress the very small proportion of inadvertent spins for the suppressed labels, it would have caused a sudden, dramatic decline in listening above what we measured, especially when we see [REDACTED] [REDACTED] from removing the vast majority of the spins or any obvious non-linearity in the effects up to that point.

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<sup>9</sup> The 34.7% of control group spins representing [REDACTED] tracks does not include “miscellaneous provider” tracks that could be, for reasons described above, as-yet-unmatched [REDACTED] tracks. To the extent some of the miscellaneous provider tracks in the control group are in fact licensed by [REDACTED] the [REDACTED] share could increase modestly.

26. Along these lines, my results are consistent with the observed linearity of the results reported by Dr. McBride in his experiments for the *Web IV* proceeding five years ago, where doubling the amount of suppression (from 15% to 30%) resulted in double the loss in listening hours (from 0.25% to 0.5%) in the [REDACTED] suppression treatment. Linearly extrapolating from those results to an approximately 90% suppression would lead one to expect a decline of 1.5% in the [REDACTED] suppression treatment, and my new results are entirely consistent with that amount of loss of listening. In other words, these new experiments, even though they have wider confidence intervals than Dr. McBride's experiments, effectively rule out the possibility of *nonlinear* effects that one might have hypothesized could occur at levels of suppression higher than those that Dr. McBride's experiments tested. Figure 3 demonstrates this conclusion graphically for the [REDACTED] treatment, displaying the [REDACTED] in listening hours measured both in Dr. McBride's experiments five years ago (extrapolated to full suppression) and in my own experiments this year. The linearity through the extremely high degree of suppression that we achieved, and the fact that [REDACTED] in listening hours at that suppression level is no more than about 5% even at the outer bounds of our confidence intervals for the largest label in our experiment, makes it nearly impossible that listening would have fallen off the cliff with a perfect suppression, or that the small number of unsuppressed tracks on their own somehow "saved" a disproportionate amount of listening time.





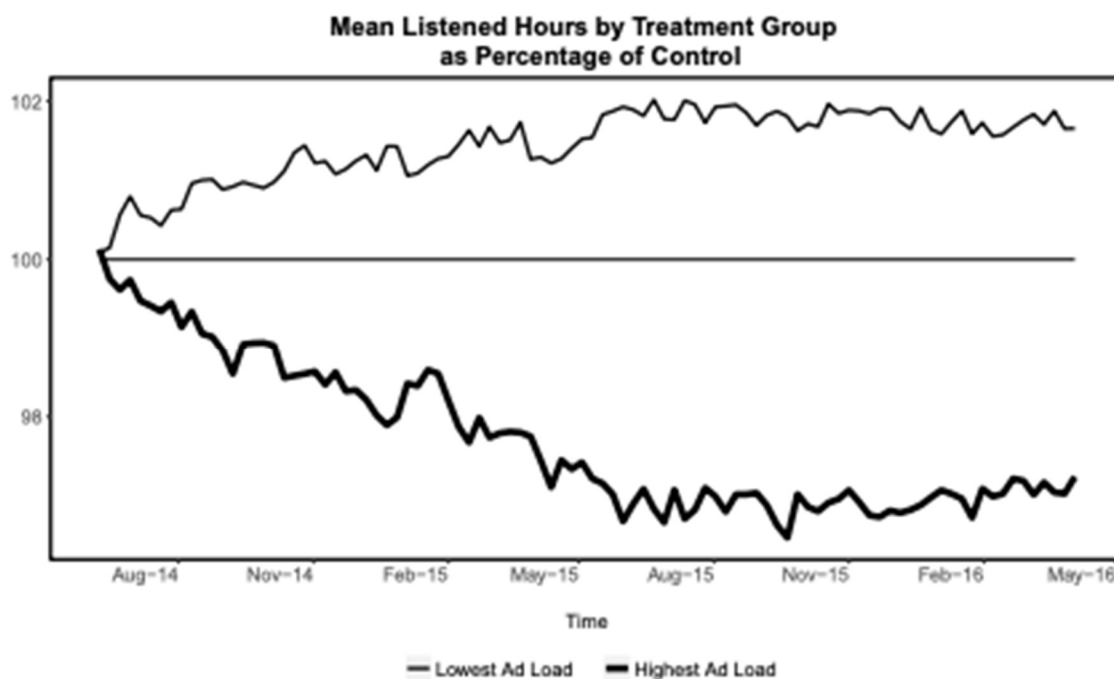
**Experiment Length and Longer Term Effects**

27. A final consideration is whether we would see a more significant impact on listening if the Label Suppression Experiments were to run longer than six months. While we cannot say for certain whether we would witness a materially larger change over a longer period of time through continued testing, I do not believe any increase would be significant. I draw this conclusion from certain long-term ad-load experiments I have worked on at Pandora, including one that we ran for 21 months in order to measure the long-run effects of changes in the total quantity of audio advertising received by listeners. That experiment concluded that listeners' behavior changed somewhat gradually, as we continued to observe the effects grow for over a

year before they stabilized at their long-run amounts.<sup>10</sup> Both the ad-load experiments and the Label Suppression Experiments involve a somewhat random process from the listener's point of view, as the song identities and quantity of ads chosen both vary over time in a way that is rather unpredictable to the listener. It is quite likely, therefore, that the long-run effects would be achieved on a similar timescale in both experiments.

28. Based on the ad-load experiments, I estimate that the effects we observe after six months in the Label Suppression Experiments could double in the long run. I reach this conclusion because the highest ad-load treatment group showed an approximately linear decline in listening hours over the first year or so, and then flattened out into what we deemed the final long-run effects.

**Figure 4:** Growth in treatment effects over time in the ad-load experiment



<sup>10</sup> Jason Huang, David H. Reiley, and Nickolai M. Riabov, Measuring Consumer Sensitivity to Audio Advertising: A Field Experiment on Pandora Internet Radio,” *available at* [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3166676](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3166676). I discussed these experiments in my Corrected Written Direct Testimony at ¶¶ 35-36.

29. The Label Suppression Experiments, while statistically somewhat noisy, are consistent with these results on the long-run decline in listening hours due to a long-run treatment, growing very modestly over the six months the suppression has been in place.

30. I would also find it reasonable to take the effects reported by Dr. McBride in the *Web IV* proceeding (which had smaller confidence intervals given the larger samples there), linearly extrapolate them to find the effects of 100% suppression, and then multiply by three to estimate the full long-run effects. While it is impossible to know with certainty (without longer experiments) whether the effects will continue to increase over time, implementing both of the extrapolations suggested here provides us a way to account for the possibility that the long run effects would be greater than we have observed over six months.

31. Accordingly, even if we take the most negative value from our estimated confidence intervals—an outer bound of approximately a 5% loss of listening in the case of [REDACTED]—and double that figure to take into account possible long-run effects, the raw level of potential listener loss in the long run remains quite small, in the range of 10%. Even if we were to conduct an experiment with a much larger sample size and perfectly executed suppression over a two-year time period, nothing in the data suggests we would find a decline in listening hours in any of our experimental treatments greater than that 10% upper bound, and the data show that the long-term decline in listener hours, if any, that might result from suppressing labels other than [REDACTED] would be below that threshold.

**Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
Washington, D.C.**

**In the Matter of**

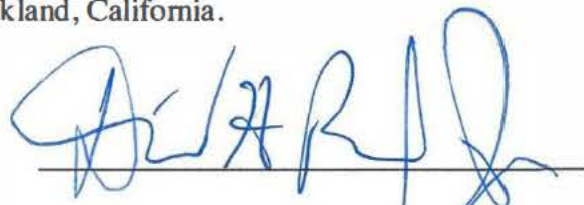
**DETERMINATION OF RATES AND TERMS  
FOR DIGITAL PERFORMANCE OF SOUND  
RECORDINGS AND MAKING OF  
EPHEMERAL COPIES TO FACILITATE  
PERFORMANCES (WEB V)**

**Docket No. 19-CRB-0005-WR  
(2021-2025)**

**DECLARATION OF DAVID REILEY**

I, David Reiley, declare under penalty of perjury that the statements contained in my Written Rebuttal Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief.

Executed this 10<sup>th</sup> day of January, 2020 in Oakland, California.



David Reiley



**Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
Washington, D.C.**

**In the Matter of**

**DETERMINATION OF RATES AND TERMS  
FOR DIGITAL PERFORMANCE OF SOUND  
RECORDINGS AND MAKING OF  
EPHEMERAL COPIES TO FACILITATE  
PERFORMANCES (WEB V)**

**Docket No. 19–CRB–0005–WR  
(2021–2025)**

**WRITTEN REBUTTAL TESTIMONY OF JASON RYAN  
(On behalf of Pandora Media, LLC)**

**I. Background and Summary of Testimony**

1. My name is Jason Ryan. I am the Vice President of Financial Planning and Analysis at Pandora Media, LLC (together with its predecessor Pandora Media, Inc., “Pandora” or “the Company”). I joined Pandora in September of 2011 and I have served in my current role since April 2018. Earlier in my tenure at Pandora I held the positions of Analyst, Manager, and Director on the Financial Planning & Analysis team.

2. Prior to joining Pandora I was an Investment Banking Analyst at Piper Jaffray, an investment bank, where I primarily focused on the technology, media, and telecommunications sectors. In this role, I worked on a team which provided buy-side and sell-side advisory services and helped companies raise debt and equity capital.

3. As Vice President of Financial Planning and Analysis at Pandora, I am responsible for a wide variety of finance tasks, including setting annual budgets, generating a monthly forecast of the business, reporting financial results, and helping decision-makers across the organization understand the financial implications of potential business decisions. In this role, I work closely with my finance counterparts at Sirius XM.

4. I present this testimony to address and provide information regarding certain aspects of the written direct testimony of SoundExchange witnesses Robert Willig and Catherine Tucker regarding the following topics: (a) Professor Willig's incorrect attribution of certain revenues to Pandora's ad-supported music offering and incorrect allocation of revenues across the various service tiers within the Pandora music offering (**Section II**); (b) Professor Willig's incorrect identification and allocation of Pandora's fixed and variable costs (**Section III**); (c) Professor Willig's incorrect attribution of certain costs to Pandora's music service offerings and/or improper service tiers within the music offering (**Section IV**); (d) Professor Willig's erroneous calculation of Pandora user and subscriber projections (**Section V**); (e) Pandora's financial forecasts and the more reliable nature of our recent "Long Range Scenario" (LRS) compared to the now out-of-date financial scenarios presented in Pandora's Merger Proxy Statement (**Section VI**); and (f) Professor Tucker's overly optimistic view of Pandora's recent financial performance, and her understatement of the projected impact of SoundExchange's proposed royalty increases on Pandora's projected profitability (or lack of profitability) (**Section VII**).

**II. Pandora's Advertising Revenues and Subscription Revenues Must Be Properly Allocated Among Pandora's Business Lines, Service Tiers, and Content Offerings**

5. Professor Willig's analysis relies on certain financial scenarios presented in Pandora's Schedule 14A filed with the Securities and Exchange Commission on December 20, 2018, which includes a Proxy Statement/Prospectus for the special meeting of Pandora stockholders (the "Proxy Statement").<sup>1</sup> The Proxy Statement includes two forecasts of financial and operating scenarios for Pandora, each for the fiscal years ending 2018 through 2025, which

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<sup>1</sup> See SoundExchange Exhibit 48.

are referred to as “Scenario 1A” and “Scenario 2” (the “Merger Scenarios”). Professor Willig’s analysis of Pandora’s financial condition based on the Merger Scenarios is incorrect in a number of important ways that can be identified by reference to the financial models underlying those scenarios.<sup>2</sup> I address those errors below.<sup>3</sup>

6. At the outset, Professor Willig incorrectly attributes all of Pandora’s advertising revenues to Pandora’s advertising-supported music service.<sup>4</sup> He appears to premise this attribution on the fact that in Scenario 2, the revenue data is disaggregated in two categories, “Advertising Revenue” and “Subscription Revenue & Other.”<sup>5</sup> However, there are two significant revenue categories within “Advertising Revenue” that should *not* be classified as being generated by Pandora’s advertising-supported music service: (1) revenues from advertising services that Pandora provides to third-parties separate and apart from ads run on its own music services, including our AdsWizz platform; and (2) revenues associated with non-music content on the Pandora free tier.

7. As indicated by the financial model underlying the Proxy Statement, “3rd Party & Platform Advertising” represented approximately \$ [REDACTED] of total advertising revenue in 2018 and was forecasted in Scenario 2 [REDACTED] of total

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<sup>2</sup> These underlying models were produced during the course of discovery at PANWEBV\_00005223 (SXM-PAN Reb. Ex. 002).

<sup>3</sup> In Section VI below, I also discuss additional challenges in relying on the Merger Scenarios (as compared to more recent internal business plans), including that [REDACTED]

<sup>4</sup> See Row [1] in Exhibit D.6 of Professor Willig’s Corrected Written Direct Testimony (“CWDT”) (identifying Pandora Free revenue growing from \$1.554 billion in 2021 rising to \$2.237 billion by 2025, the same as the “Advertising” revenue for those years in Merger Scenario 2.)

<sup>5</sup> See SoundExchange Exhibit 48, page 58, top 2 rows of table.

advertising revenue) in 2021 and [REDACTED] of total advertising revenue) in 2025.<sup>6</sup> This category [REDACTED]

[REDACTED]. This category does *not* reflect revenue for ads run on Pandora itself (or, therefore, revenue relevant to the cost of marginal listening on Pandora). This category also includes other items not reflecting ad revenue on Pandora's music service, including [REDACTED]

[REDACTED] None of Pandora's revenue-generating activities included in these categories involve Pandora playing music under the statutory license at issue in this proceeding, and Professor Willig thus mistakenly included [REDACTED] of total advertising revenue) over the 2021-2025 period in his estimates.

8. Moreover, as is indicated in the Proxy Statement, Scenario 2's projections included an expectation of growth in *non-music content* (sports, news, talk) on Pandora. While this component of Pandora listening was negligible in 2018,<sup>7</sup> the model underlying Scenario 2 projected non-music revenues to be [REDACTED] in 2021, [REDACTED] in 2022, [REDACTED] in 2023, [REDACTED] in 2024, and [REDACTED] in 2025.<sup>8</sup>

9. Professor Willig estimates relevant on-platform advertising revenue to grow from a projected \$1.554 billion in 2021 to a projected \$2.237 billion in 2025, a growth of approximately 44%. However, once these figures are corrected to (a) exclude 3rd Party & Platform Advertising revenue and (b) exclude a share of revenue attributable to non-music

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<sup>6</sup> See Rows 1 and 2 of PANWEBV\_00005223.

<sup>7</sup> See SXMWEBV\_00006410 at 00006411 ("Ad Metrics" slide, row "O&O – Non-music") (SXM-PAN Reb. Ex. 003).

<sup>8</sup> Scenario 1A non-music revenues were forecasted to be [REDACTED] in 2021, [REDACTED] in 2022, [REDACTED] in 2023, [REDACTED] in 2024, and [REDACTED] in 2025.



content, the advertising revenue as depicted in Scenario 2 would be projected to be only [REDACTED] in 2021<sup>9</sup> [REDACTED] in 2025<sup>10</sup> (growth of approximately [REDACTED]

10. Professor Willig also errs in his analysis of the projected growth of subscription revenue with respect to Pandora Plus and Pandora Premium. The Merger Scenarios in the Proxy Statement aggregated subscription revenue associated with Pandora Plus and Pandora Premium in one category.<sup>11</sup> As I understand it, Professor Willig attempted to allocate subscription revenue to Pandora Plus based on certain assumptions about the projected growth rates of both Pandora Plus and Pandora Premium—specifically, [REDACTED] [REDACTED], which compounded over five years translates to an overall growth of Pandora Premium which is [REDACTED] the growth of Pandora Plus.<sup>12</sup>

11. There is no need to resort to such approximations. The financial model underlying Scenario 2 provides separate revenue projections for each service tier. That model shows that Professor Willig [REDACTED] Whereas Professor Willig calculated that subscription revenue for Pandora Plus would grow

<sup>9</sup> [REDACTED]. (The financial documents underlying Scenario 2 identify [REDACTED] rather than \$1.554 billion as the total amount of advertising revenue projected for 2021.).

<sup>10</sup> [REDACTED]. (The financial documents underlying Scenario 2 identify [REDACTED] rather than \$2.237 billion as the total amount of advertising revenue projected for 2025.).

<sup>11</sup> SoundExchange Exhibit 48, page 58, second row of table. The Subscription category also included certain “other” revenue streams not related to Pandora’s advertising-supported or subscription music streaming services, but those were [REDACTED] per year and can be ignored here.

<sup>12</sup> Rows [2] and [3] in Exhibit D.6 of Professor Willig’s CWDT, and backup spreadsheet (tab “D.6 Pandora Profit Rate” in SOUNDEX\_W5\_000038139).

from a projected [REDACTED] in 2021 to a projected [REDACTED] in 2025,<sup>13</sup> a growth of approximately [REDACTED] the Pandora Plus subscription revenue projected in Scenario 2 was actually [REDACTED] in 2021, rising to a projected [REDACTED] in 2025,<sup>14</sup> a growth of [REDACTED] Professor Willig thus [REDACTED] (by some \$ [REDACTED] [REDACTED] in 2021 and almost [REDACTED] in 2025) as well as the growth rate.

**III. Professor Willig Incorrectly Classifies Fixed Versus Variable Costs in His Written Testimony**

12. I understand that Professor Willig’s analysis of Pandora’s marginal profit per performance relies on categorizing Pandora’s various cost categories as fixed or variable (with those in the variable category increasing as Pandora’s listening hours increase). While I am not attempting here to address Professor Willig’s theoretical model, I address his categorization of certain costs below.

**A. Sales & Marketing Expenses Include Variable Costs**

13. To start, Professor Willig classifies the costs included in the Proxy Statement line item “Sales & Marketing” as fixed.<sup>15</sup> This is incorrect.

14. Sales and Marketing costs were described as follows in Pandora’s Annual Report on Form 10-K for the year ended December 31, 2017 (our last such Form 10-K before the Sirius XM acquisition):

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<sup>13</sup> Row [2] in Exhibit D.6 of Professor Willig’s CWDT, and backup spreadsheet (tab “D.6 Pandora Profit Rate in SOUNDEX\_W5\_000038139).

<sup>14</sup> See Slide “Scenario #2” of PANWEBV\_00005223.

<sup>15</sup> See rows [48], [49], and [50] of Exhibit D.6 and backup spreadsheet (tab “D.6 Pandora Profit Rate” in SOUNDEX\_W5\_000038139). More specifically, Professor Willig allocates “Sales & Marketing” across Pandora advertising-supported and subscription services according to each service’s share of revenues. See rows [28], [29], and [30] of Exhibit D.6 of Professor Willig’s CWDT.

Sales and marketing consists primarily of employee-related costs, including salaries, commissions and benefits for employees in sales, sales support, marketing, advertising and industry relations and artist marketing departments and facilities and equipment costs. In addition, sales and marketing expenses include commissions on subscription purchases through mobile app stores (“subscription commissions”), external sales and marketing expenses such as brand marketing, advertising, customer acquisition, direct response and search engine marketing costs, public relations expenses, costs related to music events, agency platform and media measurement expenses, infrastructure costs and amortization expense related to acquired intangible assets.

15. The Sales & Marketing category in the Proxy Statement includes several costs that should be considered variable rather than fixed. Turning again to the financial model underlying the Proxy Statement,<sup>16</sup> we can see that Sales & Marketing expense includes four sub-categories: “Sales & Sales Operations,” “External Marketing,” “Other Marketing,” and “Subscription Commissions.”

16. The first subcategory, “Sales & Sales Operations,” is properly considered a *variable cost*. [REDACTED]

[REDACTED]

[REDACTED] Based on my experience, it is reasonable to assume [REDACTED]

[REDACTED].<sup>17</sup> If Pandora’s listening hours and revenues decrease, open advertising slots will decrease, and [REDACTED]

[REDACTED]

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<sup>16</sup> Rows 3 and 4 of slide “Scenario #2” in PANWEBV\_00005223.

<sup>17</sup> We do have some personnel in this category who deal with ad pricing, yield management, sales strategy and events [REDACTED]

17. Similarly, “External Marketing” is variable, and this particular variable cost

[REDACTED]. This

category includes costs related to [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] It is reasonable to assume that a reduction in revenues on the Pandora free tier or on Pandora Plus [REDACTED]

[REDACTED]. If faced with a reduction in revenues, we would [REDACTED]

18. Third, the category “Subscription Commissions” is also a variable cost, one that should be attributed entirely to the subscription services. This cost category represents in-app commissions paid to Apple and Google. It is appropriate to allocate these costs between the Premium and Plus tiers based on the respective revenues earned from those service tiers. It is also reasonable to assume that a reduction in revenues on Pandora Plus would lead to a proportional decrease in the costs in this category allocated to that service tier.

19. Finally, “Other Marketing” is a relatively small cost category including

[REDACTED]

[REDACTED]

[REDACTED]

## **B. Product Development Costs Include Fixed Costs**

20. In contrast to the above errors, where variable costs are incorrectly treated as fixed, Professor Willig improperly classifies all costs included in the Proxy Statement line item “Product Development” as *variable* costs and allocates them to the advertising-supported and



Pandora Plus services in proportion to their respective share of revenue.<sup>18</sup> However, not all costs included in Product Development are variable. As detailed below, some are fixed.

21. Product development costs were described as follows in Pandora’s 2017 Form 10-K:

Product development consists primarily of employee-related costs, including salaries and benefits related to employees in software engineering, music analysis and product management departments, facilities and equipment costs, information technology costs and amortization expense related to acquired intangible assets. We incur product development expenses primarily for improvements to our website and the Pandora app, development of new services and enhancement of existing services, development of new advertising products and development and enhancement of our personalized playlisting system. We have generally expensed product development as incurred. These amounts are offset by costs that we capitalize to develop software for internal use. Certain website development and internal use software development costs are capitalized when specific criteria are met. In such cases, the capitalized amounts are amortized over the useful life of the related application once the application is placed in service.

22. This category represents a mix of fixed and variable costs supporting general product features, product and audience analytics, quality of service, and catalog support across all tiers of service. These costs are largely comprised of personnel expenditures, as well as some development-related infrastructure and software costs. The personnel costs [REDACTED] [REDACTED] and the infrastructure and software costs are largely fixed. Accordingly, it is reasonable to estimate that a 10% reduction in listening hours on the free tier [REDACTED] For example, faced with a 10% reduction in advertising revenue on the free tier, Pandora would [REDACTED] [REDACTED] While it is challenging to predict exactly which costs

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<sup>18</sup> See rows [24], [25], and [26] of Exhibit D.6 and backup spreadsheet (tab “D.6 Pandora Profit Rate” in SOUNDEX\_W5\_000038139).

would be cut, [REDACTED]

[REDACTED]

[REDACTED]

**IV. Professor Willig’s Improper Attribution of Costs to Pandora’s Music Service or Music Service Tiers**

23. Professor Willig’s analysis also includes improper attribution and characterization of other costs to Pandora’s music service or improper allocation among its various music-service tiers. The Proxy Statement on which he relies includes information on several cost categories classified by Pandora as Cost of Goods Sold (“COGS”); in particular, the Proxy Statement differentiates between “Content Costs” and “Other COGS.”<sup>19</sup> Content Costs primarily include the royalties paid to recording artists and composers. “Other COGS” include a variety of cost categories discussed below. Professor Willig considers all costs included in the category “Other COGS” as variable and allocates them across the Pandora music service tiers based on their relative revenue shares.<sup>20</sup> This allocation is incorrect.

24. First, some of these costs are related to the provision of advertising services to third-parties as described above or other activities not involving Pandora’s music streaming. As shown in the LRS (a document I discuss in more detail below), these costs [REDACTED]

[REDACTED] which are not related to

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<sup>19</sup> SoundExchange Exhibit 48, page 58, rows with “Total COGS.”

<sup>20</sup> See rows [16], [17], and [18] of Exhibit D.6 and backup spreadsheet (tab “D.6 Pandora Profit Rate” in SOUNDEX\_W5\_000038139) of Professor Willig’s CWDT.

the operation of Pandora’s music service.<sup>21</sup> These categories represented about [REDACTED] of the Other COGS in 2018 but are forecasted to [REDACTED] of Other COGS in 2024.<sup>22</sup>

25. Next, not all of the remaining (properly music-related) costs in “Other COGS” should be allocated across Pandora’s music service tiers based on their share of revenue, as I understand Professor Willig has allocated them.<sup>23</sup> For example, network and server costs

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

26. Other costs in this general “Other COGS” category include ad serving costs incurred in connection with generating and delivering ads to listeners [REDACTED]  
[REDACTED]  
[REDACTED]<sup>24</sup> that should be allocated [REDACTED]  
[REDACTED]

<sup>21</sup> See tab “COR – Other” in SXMWEBV\_00006409 for a breakdown of Other COGS into various components. (SXM-PAN Reb. Ex. 001).

<sup>22</sup> These percentages were calculated by Professor Shapiro’s team and are net of Subscription Commissions, which the Merger Scenarios include under “Sales and Marketing” expenses rather than Costs of Revenue. The amounts that Professor Willig should have excluded from his analysis are as follows: [REDACTED] in 2021, [REDACTED] in 2022, [REDACTED] in 2023, [REDACTED] in 2024, and [REDACTED] in 2025. Note that for 2025 the same percentage as 2024 is used.

<sup>23</sup> See rows [16], [17], and [18] of Exhibit D.6 to Professor Willig’s CWDT.

<sup>24</sup> See rows 4, 7, 8, 10, 11, 12, 13, and 14 of tab “COR – Other” in SXMWEBV\_00006409.

**V. Professor Willig's Incorrect Calculation of Subscribers**

27. Professor Willig also approximates the number of projected Pandora free-tier users and projected subscribers to Pandora Plus and Pandora Premium, apparently reverse engineering them from the aggregate totals in the Merger Scenarios. His estimates are incorrect.

28. Professor Willig generates the annual number of users on the advertising-supported service between 2021 and 2025 as a straight-line interpolation between the number of users on the service in 2018 and the forecasted number of users in 2025 according to Scenario 2 of the Proxy Statement. According to Professor Willig's estimates, Pandora is expected to have an average of [REDACTED] ad-supported users between 2021 and 2025.<sup>25</sup> He calculates the number of subscribers for Pandora Plus as the ratio between the revenue allocated to Pandora Plus (an allocation, as noted above, that is itself incorrect) and the expected Pandora Plus revenue per subscriber in 2021-2025 (which Professor Willig derives from a third-party analysis).<sup>26</sup> Based on this (incorrect) revenue assumption, Professor Willig assumes [REDACTED] Pandora Plus subscribers in 2021 with that figure growing to [REDACTED] in 2025, for a total growth of about [REDACTED].<sup>27</sup>

29. These projections are incorrect in two ways. First, the underlying financial model used to generate the Merger Scenarios reveals how the projected user count breaks down across service tiers without need for extrapolation or approximation. Specifically, Pandora actually

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<sup>25</sup> See row [61] tab "D.6 Pandora Profit Rate" in the backup spreadsheet to Exhibit D.6 in Professor Willig's CWDT.

<sup>26</sup> See row [62] in the backup spreadsheet to Exhibit D.6 in Professor Willig's CWDT (tab "D.6 Pandora Profit Rate" in SOUNDEX\_W5\_000038139) and SoundExchange Exhibit 45.

<sup>27</sup> See row [62] in tab "D.6 Pandora Profit Rate" in the backup spreadsheet to Exhibit D.6 in Professor Willig's CWDT.



based its Scenario 2 forecasts on [REDACTED] than what was extrapolated by Professor Willig: about [REDACTED] on average between 2021 and 2025.<sup>28</sup> But the same model projected that under Scenario 2, Pandora [REDACTED] Pandora Plus subscribers in 2021 and [REDACTED] Pandora Plus subscribers by 2025, for a total growth of about [REDACTED]. Professor Willig's estimates of [REDACTED] and [REDACTED], respectively.<sup>29</sup> There is no need to resort to complicated extrapolations in the face of the actual projections underlying the Scenarios.

30. Second, these user counts turned out to be far too over-optimistic. As Chris Phillips explained in his written direct testimony, our count of active users has been steadily declining since 2014, with free-tier users numbering below 60 million at the timing of writing—some *20 million lower* than Professor Willig's estimate.<sup>30</sup> Our more recent LRS—which I discuss in the next section—predicts [REDACTED] [REDACTED], with the Plus subscriber component [REDACTED] in 2021 to [REDACTED] in 2024—even [REDACTED] the [REDACTED] and [REDACTED] estimated by Professor Willig.

## **VI. Pandora's LRS Provides More Recent and More Reliable Projections of Pandora's Business**

31. Professor Willig's and Professor Tucker's analyses both rely heavily on the Merger Scenarios presented in the Proxy Statement.<sup>31</sup> The Merger Scenarios were prepared by Pandora management with the assistance of investment bankers retained to help in the sale of the Company, and were presented to its Board in anticipation of its acquisition with Sirius XM.

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<sup>28</sup> Row "Ad active" of slide "Scenario #2" in PANWEBV\_00005223.

<sup>29</sup> Row "Plus subscribers" of slide "Scenario #2" in PANWEBV\_00005223.

<sup>30</sup> See Phillips Written Direct Testimony ("WDT") at ¶¶ 5, 44.

<sup>31</sup> SoundExchange Exhibit 48.

Thus, as I will explain, they do not reflect a traditional business plan or budget as would be used by management for planning or compensation decisions and reflect projections of Pandora's operations on a standalone basis (i.e., absent any combination with Sirius XM or efficiencies arising from the merger of the companies).

32. These Merger Scenarios include forecasts of Pandora revenues and costs, and they capture different assumptions on the growth of users, subscribers, Pandora's total ad RPM (*i.e.*, revenues per thousand listening hours that are attributable specifically to advertising on the music service), and ARPU (average revenue per user) several years into the future. The forecasted revenues and costs under Scenario 1A are summarized in the two tables in pages 56 and 57 of the Proxy Statement; the forecasted revenues and costs under Scenario 2 are summarized in the two tables in pages 58 and 59 of the Proxy Statement.<sup>32</sup>

33. Scenario 1A was an updated version of a target scenario that was initially prepared by Pandora in October 2017; it was revised in July 2018 to reflect certain updated assumptions, including, for example, new information about market trends and Pandora's plans after 2017. As noted in the Proxy Statement, Scenario 2 was intentionally created (in October 2017 and revised in June 2018) "to present a more optimistic view driven primarily by audience and hours growth from improvements in marketing efficiency, higher marketing spending and growth in audience engagement through Pandora's new content and product capabilities."<sup>33</sup> The Scenario 2 forecasts were based on assumptions of "greater operating efficiencies as Pandora implements [new] plans and greater deployment of capital toward growth strategies."<sup>34</sup> In his

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<sup>32</sup> SoundExchange Exhibit 48 at 56-59.

<sup>33</sup> SoundExchange Exhibit 48 at 58.

<sup>34</sup> SoundExchange Exhibit 48 at 58.

written direct testimony, Professor Willig relies on Scenario 2,<sup>35</sup> which, as indicated above, is the more optimistic among the two forecasts.

34. It is important to understand the purposes for which both scenarios were created and how that varies from the more recently updated LRS. The Merger Scenarios were created with the involvement of two investment banks (Centerview and LionTree) with the goal of determining for the Board of Directors of Pandora whether a heightened valuation of Pandora was supportable if the Company succeeded in achieving an aggressive set of business projections. Whereas long range plans used by management for business planning purposes often include a mix of “upside” and “downside” scenarios to allow the managers of the business to anticipate a variety of possible outcomes and plan budgets—and to measure the performance of executives for compensation purposes—the Merger Scenarios did not reflect such a business plan or budget. Instead, given their purpose, they focused primarily on “upside” assumptions of revenues and costs based on optimal execution of Pandora’s business plans and strategies, as well as the market moving favorably in Pandora’s direction—again, to determine what potential investors might stand to gain in an acquisition or merger.

35. The Proxy Statement was candid about this fact, noting that “there was significant uncertainty with respect to the Company’s forecasts for 2019, and that on the downside Pandora management believed that Adjusted EBITDA for 2019 could be as much as \$20-30 million lower than projected” in the Merger Scenarios.<sup>36</sup> Pandora explicitly stated that the projections in the

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<sup>35</sup> Willig CWDT, Appendix D at ¶ 3 (“I utilize the Scenario 2 projections in my analysis because Pandora’s investment bankers prepared discounted cash flow valuation analyses using these Scenario 2 projections, which produced valuations in-line with the \$3.5 billion market price paid by SiriusXM to acquire the company.”).

<sup>36</sup> SoundExchange Exhibit 48 at 55. The Proxy Statement also made clear, at p. 58, that Scenario 2 in particular was prepared “to present a more optimistic view driven primarily by audience and hours growth” and “growth in audience engagement,” and was “based on the assumption of

Proxy Statement were based on assumptions that may be overly optimistic and may not come to fruition. In short, the Merger Scenarios were solely meant to demonstrate the upside potential of the company pre-merger, not to reflect the more cautious (and typically shorter-term) financial predictions that Pandora would include in public guidance to its investors and securities analysts.

36. Given this background, I believe our recent LRS, created in the course of our routine business planning, provides a much more reliable indication of Pandora's future costs and revenues than what was included in the Proxy Statement.<sup>37</sup> The format of the LRS, which runs through 2024, has historically been generated by Sirius XM in the ordinary course of business to, among other things, guide management in the preparation of its operating budget and business plan for the next year. (The operating budget for next year that follows the LRS exercise may or may not materially alter the assumptions in the LRS.) Budgets arising from the LRS process are also a tool that the Board of Directors of Sirius XM uses throughout the year to gauge the health of the business and at the end of the year when assessing performance-based compensation of executive officers and employees.

37. Prior to its acquisition by Sirius XM, Pandora created five-year financial models, typically in the third or fourth quarter. Pandora has now adopted the format of the Sirius XM forecasting model and, accordingly, prepared an LRS in June 2019. The LRS is submitted herewith as SXM-PAN Reb. Ex. 001.

38. The LRS [REDACTED]

[REDACTED]

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greater achievement of operating efficiencies as Pandora implements these plans and greater deployment of capital toward growth strategies.” It further clarified, on p. 59-60, its assumption of 84.3 million ad-supported users by 2025 along with a variety of other aggressive assumptions.

<sup>37</sup> SXMWEBV\_00006409.



[REDACTED]

[REDACTED]

flow from our reasonable efforts to plan and predict the trajectory (contraction or growth) of the business.

39. As compared to Merger Scenario 2 (relied on by Professor Willig), Pandora's LRS forecast provides a more recent and more balanced picture of Pandora's financial condition based on currently available information. Not only was it created more recently than Scenario 2, and thus more grounded in reality rather than aspiration, it also reflects Pandora's status as a subsidiary of Sirius XM and the revenue and cost synergies obtained from the Sirius XM acquisition.

40. Close examination of the LRS reveals [REDACTED]

[REDACTED] Most notably, the count of Pandora's Total Active users changed substantially in the intervening period between the creation of Scenario 2 and the LRS: whereas Scenario 2 predicted [REDACTED] Total Active users for fiscal year 2019 and [REDACTED] Total Active users by 2024,<sup>38</sup> the LRS shows a Total Actives count for 2019 of [REDACTED] and a prediction for 2024 (its last year) of [REDACTED], more than [REDACTED] than predicted less than two years ago in Scenario 2.<sup>39</sup> As to subscriber counts, Scenario 2 forecasted Pandora subscribers to grow to [REDACTED] in 2024 [REDACTED] Pandora Plus and [REDACTED] Pandora Premium subscribers), while the LRS forecasts a total subscriber count of [REDACTED] Pandora Plus and [REDACTED] Pandora Premium).

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<sup>38</sup> Row "Total Actives" in slide "Scenario #2" in PANWEBV\_00005223.

<sup>39</sup> The 2019 count is identified as an estimate in the LRS because it was prepared mid-year. The actual final count for year-end 2019 was [REDACTED], at [REDACTED].

41. This is not just a case of the Merger Scenarios [REDACTED]  
[REDACTED]. We already *know* based on *actual experience* that the Merger Scenarios were far too optimistic (and indeed flatly incorrect) as to periods *that have already occurred*. That actual known underperformance informs the LRS and makes it more reliable going forward than either of the Merger Scenarios (although it too of course [REDACTED]  
[REDACTED]

42. As indicated above, given that the LRS presents a more realistic and up-to-date view of Pandora’s future financial performance, it is more reliable than the Merger Scenarios in the Proxy Statement for purposes of evaluating Pandora’s business projections and ability to pay increased royalty rates.

**VII. Professor Tucker’s Conclusion that Pandora is “Well Positioned” to “Pay Higher Royalty Rates Relative to the Rates Set in the Web IV Proceeding” is not Well-Founded**

43. The following section addresses the written direct testimony of Catherine Tucker. Professor Tucker, like Professor Willig, relies on the Merger Scenarios, which she contends support the conclusion that Pandora is “well positioned” to “pay higher royalty rates relative to the rates set in the Web IV proceeding.”

**a. Professor Tucker Exaggerates Pandora’s Financial Success**

44. At the outset, I note that Professor Tucker makes no effort to demonstrate what specific level of royalties Pandora can or cannot afford, or how any particular increase in royalties would affect Pandora’s financial picture. She simply points to aspects of Pandora’s projections (including the now outdated Merger Scenarios) and suggests they support her thesis. But she provides no support for how those measures would affect our finances, or—more important—what a willing buyer (webcaster) would agree to pay a willing seller (record company) for a license to publicly perform sound recordings, which I understand to be the test

here (as compared to, say, figuring out what a webcaster might be able to afford without shutting down).

45. For example, Professor Tucker asserts that “Pandora is now generating positive adjusted EBITDA and it expects these gains to continue.”<sup>40</sup> Professor Tucker further asserts that “Pandora’s Q2 2019 gross profits were 40 percent higher relative to Q2 2018,” noting “this positive trend is expected to continue.”<sup>41</sup> While it is technically true that the LRS shows Pandora’s adjusted EBITDA—the primary metric by which we measure our business health—as positive (for the first time in many years) in 2019, it was [REDACTED]<sup>42</sup> (and even at that level, [REDACTED] Pandora is estimating its profitability [REDACTED] in 2020, [REDACTED] [REDACTED].<sup>43</sup> Moreover, Pandora’s gross margin percentage [REDACTED] [REDACTED]

46. It must also be recognized that [REDACTED]

[REDACTED], but [REDACTED]  
[REDACTED]  
[REDACTED]

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<sup>40</sup> Tucker WDT at ¶ 91.

<sup>41</sup> Tucker WDT ¶ 137; *see also* Tucker WDT at ¶139 (“In Pandora’s [2018] Form S-4 Projections... Pandora expects to generate positive annual operating income of \$321 million to \$457 million by 2024.”); Tucker WDT at ¶141 (“According to its internal projections produced in this matter, Pandora anticipates its total revenues to increase to approximately \$2.1 billion in 2022 and expects to generate positive adjusted EBITDA in the coming years.”).

<sup>42</sup> Row “Adjusted EBITDA” in tab “Summary” of SMXWEBV\_00006409. At the time of this writing, we are closing our year-end books, and it appears that the actual figure [REDACTED].

<sup>43</sup> Row “Adjusted EBITDA” in tab “Summary” of SXMWEBV\_00006409.

[REDACTED] The synergies impacting the Pandora P&L will total over [REDACTED]<sup>44</sup>

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

47. Without the Op-Ex synergies, [REDACTED]

[REDACTED]. This is because [REDACTED]

[REDACTED]

[REDACTED]<sup>45</sup> [REDACTED]

[REDACTED]

[REDACTED]

48. Further, Professor Tucker’s glib suggestion that Pandora can pay higher royalties because of expected improved performance from 2020-2024 ignores that [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. As discussed above, during the 2021-2025 time period, that revenue (per Merger Scenario 2) constituted [REDACTED] and [REDACTED] of Pandora’s total advertising revenue (rising from [REDACTED] to [REDACTED] annually).

<sup>44</sup> See tab “Total Synergies – 2020” in PANWEBV\_00004996 (SXM-PAN Reb. Ex. 004).

<sup>45</sup> See tabs “Total Synergies – 2019” and “Total Synergies – 2020” in PANWEBV\_00004996.



49. I have calculated how the adjusted EBITDA would change if the revenues (and costs) associated with those off-platform activities were removed from our LRS projections. In short, [REDACTED]

[REDACTED]

[REDACTED] That Pandora's projected EBITDA levels [REDACTED]

[REDACTED] seems

hardly a justification for increasing royalty rates on licensed music.

**b. SoundExchange's Requested Royalty Rate Increases Would Erase Pandora Profitability**

50. In what follows, I address the impact on our financial projections of the royalty increase sought by SoundExchange. SoundExchange's proposal [REDACTED]

[REDACTED]

51. The LRS currently projects the following adjusted EBITDA margins for 2021 to 2024:

- 2021: [REDACTED];
- 2022: [REDACTED];
- 2023: [REDACTED];
- 2024: [REDACTED]

52. Were SoundExchange's rate to be adopted by the Judges, I calculate that our annual royalty costs [REDACTED]

[REDACTED] <sup>46</sup> This would drop our adjusted EBIDTA as follows:

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<sup>46</sup> These projections are based on [REDACTED]

[REDACTED]

- 2021: [REDACTED]
- 2022: [REDACTED];
- 2023: [REDACTED]
- 2024: [REDACTED]

53. Again, I do not think it is proper to justify a royalty increase simply on the fact that a service might be able to afford the increase and remain profitable. But in any event, these numbers completely undermine Professor Tucker's contention that Pandora does in fact have the ability to pay increased royalty rates without significant and potentially business-ending consequences.

**c. Despite Professor Tucker's Assertions of Industry-Wide Cost Reductions, Pandora Has Not Enjoyed Such Cost Reductions**

54. Moreover, Professor Tucker's claim regarding industry-wide cost reductions<sup>47</sup> has not always borne true for Pandora. For example, Pandora's infrastructure costs, product development costs, and ad sales costs have actually increased over time.

55. *Cloud Costs.* Pandora's server and associated infrastructure costs have gone up even with fewer overall Pandora users. This is largely a result of more data and more calculations so that Pandora can better run its business and better serve its advertisers. Pandora captures over a billion data points a day and has to actively use this data to power its features and monetization, which then drives its operational costs up. Pandora's combined on premise and cloud infrastructure costs [REDACTED] in 2017 to a forecast of [REDACTED] in 2020.

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<sup>47</sup> Tucker WDT at ¶ 22.

56. *Product Development Costs.* Professor Tucker ignores the cost to Pandora to develop its upper tiers, Pandora Plus and Pandora Premium, while at the same time touting those tiers as supporting a higher free-tier rate for Pandora. Pandora undertook these necessary costs in order to stave off user migration. As Pandora began development on Pandora Plus and Premium in late 2015, product development costs [REDACTED] [REDACTED] the year in which Pandora Premium launched. In addition, Pandora purchased the assets of music streaming company Rdio in November 2015 for \$75 million in order to accelerate the development of Pandora Premium. Product development costs increased further in 2018 and 2019, and we expect these costs to continue to increase in order to support and improve our existing consumer products, ad technology, analytics capabilities and quality of service.

57. *Ad sales.* Contrary to Professor Tucker's contention, Pandora's ad sales staff is still large despite the shift to programmatic advertising. Programmatic advertising may make it easier for ad buyers, but the buyers still work with Pandora's ad sales staff to negotiate pricing and with Pandora's client services team to measure effectiveness and report on campaign results. Pandora's overhead costs for advertising remain as well. Further, Professor Tucker's assumption that technological advancements in ad sales would, on its own, allow Pandora to sell more ads is a gross oversimplification. Pandora has developed the most sophisticated advertising platform in the music streaming business, and has devoted tremendous resources to maximizing ad-sales revenues—an effort which requires an incredibly careful balancing of ad loads, pricing, sell-through rates, etc., so as to squeeze as much revenue as possible out of existing listening without driving down listening hours and counter-productively lowering the available supply of ad spots

(and thus ad revenue too).<sup>48</sup> Pandora has actually increased audio ad load by [REDACTED] since 2015. And at the ad-load levels we have determined to be optimal, Pandora's unsold ad inventory is already very low: for example, our inventory in the core 25-54 demographic is effectively sold out during the majority of the year. Our problem at the end of the day is primarily one of *supply*: as our user base declines, we simply have less inventory in the demographics advertisers desire to meet the market demand for ads on our platform. No amount of technical advancement in programmatic ad delivery is going to fix *that* problem.

58. Professor Tucker's suggestion that these industry-wide trends provide significant cost savings to Pandora that it could use to pay increased royalties is baseless.

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<sup>48</sup> See Herring Designated Amended Written Rebuttal Testimony at ¶¶ 27-33, 38-47; See also Phillips WDT at ¶¶ 29-36.

**Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
Washington, D.C.**

**In the Matter of**

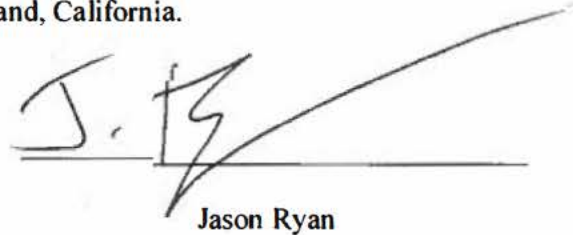
**DETERMINATION OF RATES AND TERMS  
FOR DIGITAL PERFORMANCE OF SOUND  
RECORDINGS AND MAKING OF  
EPHEMERAL COPIES TO FACILITATE  
PERFORMANCES (WEB V)**

**Docket No. 19-CRB-0005-WR  
(2021-2025)**

**DECLARATION OF JASON RYAN**

I, Jason Ryan, declare under penalty of perjury that the statements contained in my Written Rebuttal Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief.

Executed this 10<sup>th</sup> day of January 2020 in Oakland, California.



A handwritten signature in black ink, appearing to read 'J. Ryan', is written over a horizontal line. The signature is stylized with a large, sweeping flourish extending to the right.

Jason Ryan



**Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
Washington, D.C.**

**In the Matter of**

**DETERMINATION OF RATES AND TERMS  
FOR DIGITAL PERFORMANCE OF SOUND  
RECORDINGS AND MAKING OF  
EPHEMERAL COPIES TO FACILITATE  
PERFORMANCES (WEB V)**

**Docket No. 19–CRB–0005–WR  
(2021–2025)**

**WRITTEN REBUTTAL TESTIMONY OF THOMAS D. BARRY  
On behalf of Sirius XM Radio Inc.**

**Introduction**

1. My name is Thomas D. Barry. I am Senior Vice President and Controller for Sirius XM Radio Inc. (“Sirius XM”), a position I have held since 2009. Prior to joining Sirius XM, I served as Vice President of Finance and Corporate Controller of The Reader’s Digest Association, Inc. I have also served in executive and finance capacities at Books Are Fun, Inc., Xerox Engineering Systems, and Avon Products, and as a Senior Associate at PricewaterhouseCoopers.

2. I graduated from Creighton University in 1988 with a Bachelor of Science in Business Administration. After working for several years following graduation, I earned an MBA from the University of Connecticut School of Business. I am a certified public accountant, and in 2005, I completed the Advanced Management Program at Harvard Business School.

3. In my position at Sirius XM as the Chief Accounting Officer, I oversee transactions and accounting for our organization, including the ad sales traffic department, accounting, financial shared services, the fraud department, revenue assurance, tax accounting, internal/external reporting, and billing. I oversee approximately 150 people in these

departments. I previously offered direct and rebuttal testimony to the Copyright Royalty Judges in the *SDARS III* proceeding.

4. In this Written Rebuttal Testimony, I respond to SoundExchange’s proposals to change certain aspects of the commercial webcasting regulations in a fashion that would impose unnecessarily strict and impractical burdens and deadlines on licensees such as Sirius XM; levy unfair penalties for failure to meet those burdens and deadlines; compromise the objective and impartial role of the independent auditors in the license reporting process; and create perverse incentives for SoundExchange to increase the load of administrative and audit work in which licensees and record companies engage. To the extent the Copyright Royalty Judges consider adopting any of these flawed proposals, I explain how certain modifications to the regulatory language proposed by SoundExchange could reduce the potential damage that would be done by their adoption.

5. Section I of my testimony responds to—and opposes—SoundExchange’s proposed changes to the audit provisions of the governing webcaster regulations. Section II of my testimony recommends modifications to SoundExchange’s proposal regarding the reporting of excluded sound recordings. Section III opposes SoundExchange’s bid to alter the regulations regarding unclaimed funds in order to create a windfall for itself.

#### **I. SoundExchange’s Proposed Changes to the Audit Provisions Should Be Rejected**

6. Sirius XM opposes SoundExchange’s proposed changes to the audit provisions in sections 380.7(d), (f), (g), and (h) of SoundExchange’s Proposed Regulations submitted September 23, 2019 (“SX Proposal”).<sup>1</sup>

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<sup>1</sup> The proposed changes are discussed in the Written Direct Testimony of SoundExchange’s Chief Operating Officer, Jonathan Bender (“Bender WDT”): Response Deadlines, Audit Fee

7. ***Response Deadlines.*** In Section 380.7(d) of its proposed regulations (as renumbered by SoundExchange), SoundExchange asks the Judges to impose strict deadlines for responding to field-work and information requests from auditors:

d) *The audit.* The audit must be conducted during regular business hours by a Qualified Auditor who is not retained on a contingency fee basis and is identified in the notice. If the auditor sends the Payor a written request to conduct field work for the audit, the Payor must endeavor to schedule such field work for a date or dates within 30 days after the date of the request, and in any event must schedule such field work for a date or dates within 60 days after the date of the request. If the auditor sends the Payor a written request for information reasonably related to the audit, the Payor must promptly respond to the auditor if the Payor does not believe that the request is reasonable, in which case the Payor and auditor must promptly endeavor to agree concerning the provision of reasonable information responsive to the auditor's reasonable purpose for seeking the information. The Payor must provide the auditor reasonable information responsive to the auditor's reasonable purpose for seeking additional information within 60 days after the date of the request.

SX Proposal at 18-19 (new proposed text underlined).

8. These changes should be rejected. Sirius XM fully appreciates and supports the desire to conduct audits efficiently and without unnecessary delays, particularly given the application of interest payments to any underpayments that are found (which on its own provides sufficient incentive for us to respond expeditiously to auditor requests). That said, SoundExchange's proposal to micromanage the timing of intermediate steps in the audit process is unworkable and unfair for several reasons.

9. While in some instances it may be perfectly feasible for licensees to schedule field work or provide information within the timeframes SoundExchange proposes, enshrining a firm and unbending 60-day deadline in the regulations—subject to a proposed cost-shifting to the

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Shifting for Failure to Provide Information, Clarification of Auditor's Rights to Consult Its Client, and Interest on Late Payments Discovered in Audits. See Bender WDT ¶¶ 97-115.

audited party for failure to supply the requested information—ignores Sirius XM’s historical experience with SoundExchange audits and ignores the practical realities of the audit process including sometimes unavoidable delays that are not within the statutory licensee’s control. For instance, when an audit is noticed near the end of a calendar year, the combination of the winter holiday season and the time burdens on accounting and finance personnel that tend to spike at year-end (primarily as a result of the need to complete audited financial statements and file them with the Securities and Exchange Commission in an Annual Report on Form 10-K) and in first-quarter “tax season” can make scheduling field work (for the auditors as well as the audited party) impractical within 60 days. During this time of year, the external auditors also commonly have other significant demands on their time that cannot be controlled by the licensee.

10. Sirius XM encountered precisely these sorts of difficulties scheduling SoundExchange’s current audit of the 2018 license period. We and the auditors originally jointly targeted the week before Thanksgiving to conduct fieldwork, but when a conflict arose, the auditors needed to reschedule. After dealing with Thanksgiving week, closing our November books, Christmas vacations, year-end earnings reports (which took up much of January), then the closing of the January books, we and the auditors mutually agreed to start the fieldwork in February. This is not to place blame, only to note that even a simple rescheduling pushed the start of fieldwork out some ten weeks. In another instance, we spent several weeks negotiating a non-disclosure agreement (NDA) with the auditor, only to have a change in the firm conducting the audit and the need to renegotiate a new NDA.

11. Similarly, when an auditor requests access to data (including metadata) that is not readily accessible on-site (for instance, where it has been archived with an offsite vendor or even several vendors, as can be the case), that request necessarily takes longer to fulfill than a request

for data that is actively maintained at the company, and could make compliance within 60 (much less 30) days infeasible or impossible. In certain instances, the lack of clarity in the auditor requests can also require incremental time to detail the request and provide the data. Such delays can be exacerbated where our IT personnel and/or software coders need to be enlisted to pull and/or interpret metadata requests, especially if they need to get involved in conversations with the auditors; in our experience, it can take a fair amount of back-and-forth between the financial types and the tech personnel (who speak different “languages”) to fully discuss, interpret, and understand what is being requested. When would a compliance period begin and when would it end with the ongoing back-and-forth that occurs during the audit process? And how would the proposed deadlines accommodate a situation where the auditor makes an initial request, the licensee asks for clarification, and the auditor does not get back to the licensee for days or even weeks?

12. It has also been our experience that auditors, often at SoundExchange’s behest, request access to documents that are well beyond the scope of what is reasonably necessary to review a licensee’s payments, leading to unnecessary disputes that can take time to resolve. For instance, auditors in the past have demanded copies of Sirius XM’s direct license agreements and artist waivers (which number in the hundreds), with the aim of interrogating the legal sufficiency of the rights granted in those agreements. That dispute—and our subsequent provision of redacted versions of agreements—took weeks to sort through. Auditors have even demanded copies of Sirius XM’s agreements with its automaker partners.

13. For these reasons, imposing hard and inflexible deadlines to respond to all fieldwork and information requests from an auditor—regardless of the nature or complexity of the request—would be impractical and inappropriate for the licensee as well as the auditors.



Sirius XM has always attempted in good faith to respond timely to reasonable auditor requests, and Mr. Bender does not assert otherwise; there is simply no need to layer in SoundExchange's proposed interim deadlines to the regulations.

14. If specific deadlines for responding to auditor requests *were* set by regulation, then at the very least, to account for the practical realities I describe above, several changes should be made to eliminate unnecessary friction between the auditors and the licensee. First, the scheduling of the field work within enumerated deadlines should be reciprocal (i.e., they should apply to the auditor as well as the Payor), and it should be the auditor's responsibility to maintain a schedule detailing the specific requests that have been made, the Payor's agreement (or other response) to the request, the specific date of the Payor's response, and any period of delinquency. This responsibility may require incremental auditor time, but it is necessary to ensure transparency in the process. Second, additional time should be built into SoundExchange's proposals: *i.e.*, the auditor and Payor should endeavor to schedule field work within 60 days of the request, and in any event must schedule the field work within 90 days of the request. Third, the regulations should more clearly provide for exceptions in instances in which the auditor seeks information that is unreasonably burdensome or not reasonably related to the audit, or where the Payor reasonably determines that completing the auditor's request within 90 days is infeasible. While SoundExchange attempts to address the concept of reasonableness in its proposal, we suggest clearer language—including as to reasonable burden—below.

15. With such appropriate revisions, SoundExchange's proposed new text in Section 380.7(d) would instead read as follows:

If the auditor sends the Payor a written request to conduct field work for the audit, the auditor and the Payor must endeavor to schedule such field work for a date or dates within ~~30~~ 60 days after the date of the request, and in any event must schedule such field

work for a date or dates within ~~60~~ 90 days after the date of the request. If the auditor sends the Payor a specific written request for information ~~reasonably~~ related to the audit, the Payor must promptly respond to the auditor if the Payor does not believe that ~~the request is reasonable~~ requested information reasonably is necessary to verify the Payor's payments or is available without unreasonable burden, in which case the Payor and auditor must promptly endeavor to agree concerning ~~the provision of reasonable information responsive to the auditor's reasonable purpose for seeking the information~~ what information the Payor can and should reasonably provide and a schedule for the provision of such information. The Payor must provide the auditor ~~reasonable information responsive to the auditor's reasonable purpose for seeking additional information~~ the agreed-upon information within ~~60~~ 90 days after the date of the request, other than information where the Payor reasonably determines that completing an auditor's request within 90 days is infeasible, in which case the Payor shall provide the information as promptly as possible. The Auditor shall maintain a schedule detailing the specific information requests that have been made, the Payor's agreement (or other response) to the request, the specific date of the Payor's response, and any period of delinquency.

16. The above revisions to SoundExchange's proposal would help account for unreasonable requests and circumstances beyond the Payor's (or auditor's) control. But even as revised, this proposal still would needlessly micromanage intermediate steps of the audit process and lead to inefficient work. If SoundExchange is serious about audit timeliness, a more effective solution would simply be to require that audits be completed within one year of being noticed. A one-year timeframe for the audit as a whole would encourage diligence and responsiveness by *both* the Payor and the auditor, while providing needed flexibility in responding to information requests. (It would also help limit the amount of interest that accrues on alleged underpayments when audits drag on, a topic I discuss below.) Under this alternative proposal, 37 C.F.R. § 380.6(b) would be amended as follows:

Frequency of auditing. The verifying entity may conduct an audit of each licensee only once a year for any or all of the prior three calendar years. The auditor must complete its fieldwork and

deliver its written report within 10 months of the date that the verifying entity notices the audit, and the Payor must respond to the written report in writing within one year of such notice. A verifying entity may not audit records for any calendar year more than once.

17. ***Audit Fee Shifting for Failure to Provide Information.*** In Section 380.7(h), SoundExchange proposes new language that would shift the full cost of an audit to the Payor if the Payor fails to complete an information request by the auditor within 60 days. *See* SX Proposal at 20 (requiring Payor to “bear the reasonable costs of the audit” if the Payor “does not provide information requested by the auditor that is in the possession of the Payor or a contractor to the Payor within 60 days after the date of the auditor’s written request for that information”). This proposal should be rejected out of hand.

18. First, under the current regulations, delays in the audit process already result in the Payor paying incremental interest as the audit is performed. Therefore, an incremental cost-shift penalty would be unnecessarily punitive.

19. Second, under SoundExchange’s proposal, the responsibility for paying the cost of the *entire audit* would apparently fall on the Payor if the Payor fails to complete even a single information request by the proposed 60-day deadline. Even if it were appropriate to shift costs on the basis of untimely responses to requests for information—which, as I explain below, it is not—shifting the full cost of a potentially lengthy and complex audit based on a single late response would be unnecessarily punitive and unfair.

20. Third, the cost-shifting provision could be subject to abuse by the party requesting an audit. SoundExchange’s proposed language lacks any requirement that the auditor’s request be substantively reasonable, or reasonable to complete within 60 days. As drafted, it would open the door to *unreasonable* and intrusive demands, with which licensees would be forced to comply

under penalty of paying the full cost of the audit. This is not an abstract fear: as I have discussed, during prior audits by SoundExchange, Sirius XM faced impractical and overbroad information requests that took significant time and effort to resolve. *See supra* ¶ 12.<sup>2</sup>

21. ***Clarification of Auditor’s Right to Consult Its Client.*** In Section 380.7(f) of its proposed regulations, SoundExchange inserts a new sentence that purportedly would “clarify” the auditor’s ability to consult with its “client,” the Verifying Entity. SX Proposal at 19. The proposed sentence reads: “Throughout the audit process, the auditor may consult with the Verifying Entity, including to advise it concerning the status of the audit, request information relevant to the audit, and request the Verifying Entity’s views concerning tentative findings and other issues.” *Id.*

22. The Judges should reject SoundExchange’s proposed insert, which fundamentally misconstrues the nature of the relationship between the Payor, the auditor, and the Verifying Entity. The governing regulations appropriately provide that the auditor be “independent”—not a mere agent of SoundExchange or another Verifying Entity. 37 C.F.R. § 380.7 (defining “Qualified auditor” as an “*independent* Certified Public Accountant licensed in the jurisdiction where it seeks to conduct a verification”) (emphasis added). Yet in our experience, SoundExchange has hired auditing firms that are willing to compromise their independence and objectivity by closely coordinating with SoundExchange personnel in advance of and during an audit, including as to SoundExchange’s often dubious and overly aggressive interpretation of the

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<sup>2</sup> I note that this concern is not alleviated by the suggestion above that information requests be made subject to a standard of relevance and reasonableness. The parties may disagree on what is or is not reasonable, and such disputes could be even more common if a potential fee-shift lurks for non-compliance.

governing regulations.<sup>3</sup> As a result, as noted above, the auditors have come into the audits seeking burdensome and irrelevant information far afield from the legitimate purposes of payment verification, and looking only for underpayments by the licensee that favor SoundExchange, not overpayments that might redound to the benefit of the licensee, and auditors who do not find underpayments are not engaged for subsequent audits. Such practices fail the standards set by the American Institute of Certified Public Accountants (AICPA), whose code of conduct prohibits the “subordination” of the auditor’s “judgment” to the interests of its client. *See* AICPA Code of Professional Conduct § 0.300.050.03 (“Objectivity and Independence”). SoundExchange’s proposed language would make the independence of the auditor a sham and expressly encourage *more* of the improper coordination and consultation that we have already seen between SoundExchange and the auditors, further stacking the deck against licensee Payors.

23. Although Mr. Bender characterizes SoundExchange’s proposal as merely “clarifying” an auditor’s existing right to consult the Verifying Entity (Bender WDT ¶ 101), nothing in the current regulations suggests that an auditor should, as SoundExchange proposes, “request the Verifying Entity’s views” on tentative findings and other issues (SX Proposal at 19). To the contrary, the “Duty of auditor to consult,” noted in the title of the current Section 380.6(f), refers to the auditor’s duty to consult *the Payor* by reviewing tentative findings with “an appropriate agent or employee *of the Payor* in order to remedy any factual errors and clarify any issues relating to the audit.” 37 C.F.R. § 380.6(f) (emphasis added). SoundExchange’s

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<sup>3</sup> To give just a couple examples, SoundExchange’s auditor alleged an underpayment of royalties of nearly \$70 million based on SoundExchange’s ill-founded contention that Sirius XM did not recognize revenue from its performances of pre-1972 recordings. In the same audit, based on SoundExchange’s contention that Sirius XM needed to pay SoundExchange for live recordings created by Sirius XM when artists visited the Sirius XM studios, the auditor demanded copies of all of Sirius XM’s agreements with those artists and claimed that, as a legal matter, the agreements did not excuse Sirius XM from paying SoundExchange.



proposal only further tilts what should be a neutral, level playing field in its own favor, and it should be rejected.

24. ***Interest on “Late” Payments Discovered in Audits.*** Finally, Mr. Bender urges the Judges to maintain the existing interest rate for underpayments discovered in the course of an audit. *See* Bender WDT ¶¶ 107-111. But the existing rate of 1.5% per month (or 18% per year) borrows from a separate regulatory penalty for late payments that is inappropriate as an interest fee on an audit underpayment. *See* 37 C.F.R. § 380.6(g) (calling for underpayment interest at the rate specified in § 380.2(d) (“Late fees”)). As my colleague Jennifer Witz has explained in her Written Direct Testimony—and as the Judges agreed after the issue was more fully litigated in *SDARS III*—it makes no sense to use the extremely high rate for *late* payments—plainly intended as a short-term *penalty* to incentivize timely payment—as the interest rate where payments were in fact made on a timely basis but happened to include underpayments made in good faith and later discovered in an audit. Given that audits may not even start until years after the payment was made (given the three-year audit window), an 18% annual rate on underpayments can lead to absurd, usurious results, in which the amount of interest due rivals the principal owed (even with edits to the regulations limiting the duration of the audit or hastening fieldwork and information sharing). For this reason, the Judges should instead accept Sirius XM’s and Pandora’s proposal, which would apply the post-judgment interest rate more recently adopted in *SDARS III*.<sup>4</sup>

25. Mr. Bender suggests, implausibly and without a shred of support, that if the lower post-judgment interest rate were adopted, webcasters would intentionally underpay their

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<sup>4</sup> In this regard, the Judges should also consider the proposal above that audits be completed within one year of being noticed, which would help limit the amount of interest that can accrue during the audit.

royalties, in order to use the post-judgment interest rate as a form of “cheap borrowing.” Bender WDT ¶ 110. But following Mr. Bender’s logic, one could argue by the same token that maintaining the incredibly high 18% rate would encourage SoundExchange to *delay* audits and their resolution—in the hope of capitalizing on the prime investment opportunity that is underpayment interest. Neither scenario is realistic, and this sort of speculation should be ignored. The more sensible approach here is Sirius XM’s and Pandora’s proposal, which uses the standard interest rate applied to federal court judgments, as recently adopted in *SDARS III*.

## **II. SoundExchange’s Proposal Regarding Excluded Sound Recordings, If Accepted, Should be Modified for Clarity**

26. SoundExchange proposes to add a new Subsection (e) to 37 C.F.R. § 380.10 (“Royalty fees for the public performance of sound recordings and the making of ephemeral recordings”). The proposed Subsection (e), entitled “Reporting of excluded sound recordings,” would require licensees to provide monthly reports identifying and describing the sound recordings to which they hold direct licenses (and which accordingly have been excluded from their calculation of statutory royalties). *See* SX Proposal at 22 (requiring identification of the “featured artist name, sound recording title, and International Standard Recording code (ISRC) number” of each directly licensed track).

27. Sirius XM does not object to providing readily available information to SoundExchange identifying directly licensed tracks that have been excluded from its calculation of statutory webcasting royalties. As Mr. Bender notes, Sirius XM already provides regular reports to SoundExchange identifying directly licensed tracks that have been excluded from its SDARS royalty calculations. But, for many directly licensed tracks, it may not be feasible for Sirius XM to provide *all* of the specific information called for in SoundExchange’s proposed Subsection (e).

28. SoundExchange’s proposed regulation provides that if the ISRC is not available for a given track, or if reporting the ISRC is not feasible, the licensee may instead report the “album title and Copyright Owner name.” SX Proposal at 22. But in such situations, the proposed alternative may not be feasible either, because the “Copyright Owner” (as that term is defined in the governing regulations) often is not known to Sirius XM. Rather, Sirius XM typically tracks the record label for the recording and the party that licensed the particular recording to Sirius XM (which may not always be the Copyright Owner itself, but instead a subsidiary, affiliate, or distributor of the Owner). And, in the case of pre-1972 recordings that Sirius XM performs pursuant to an agreement settling several lawsuits brought by a class of sound recording owners represented by class plaintiffs Flo & Eddie, Inc. (the “Flo & Eddie Settlement”), Sirius XM’s data (especially for as-yet unclaimed tracks under the settlement) may reflect not the actual “Copyright Owner” of the recording, but a designation that the direct license authority is derived from the Flo & Eddie Settlement.

29. Accordingly, the proposed regulation should provide that licensees may in the alternative report the “album title and Copyright Owner *or other direct licensor*.” The modified language of SoundExchange’s proposal would then read:

(e) Reporting of excluded sound recordings. If the Licensee excludes any sound recordings it uses from its calculation of royalties (e.g., by not paying royalties on Performances thereof or excluding Performances thereof from its computation of ATH) on the basis that the Licensee believes it has a direct license of relevant rights from the Copyright Owner (or other party authorized to license the recording), the Licensee must provide the Collective, by no later than the due date for the relevant payment under §380.3(c), a list of each Copyright Owner or other direct licensor from which the Licensee claims to have a direct license of rights to such sound recordings that is in effect for the relevant month and of each sound recording for which the Licensee makes such an exclusion, identified by featured artist name, sound recording title, and International Standard Recording Code (ISRC)

number or, if the ISRC is not available or reporting of the ISRC is not feasible, album title and Copyright Owner or other direct licensor name. Notwithstanding §380.6, the Collective may disclose such information as reasonably necessary for it to confirm whether a claimed direct license exists and claimed sound recordings are properly excludable.

30. This minor modification to SoundExchange’s proposal would ensure that the new regulation conforms to existing market realities.

### **III. SoundExchange’s Proposal to Keep Unclaimed Funds for Itself Should Be Rejected**

31. In both the *Web IV* and *SDARS III* proceedings, the Judges ruled that SoundExchange could not simply use all unclaimed royalties to pay its own administrative expenses; rather, SoundExchange must follow any applicable federal, state, or common law when disposing of unclaimed funds. *See* 81 Fed. Reg. 26316, 26400 (May 2, 2016); 83 Fed. Reg. 65210, 65262 (Dec. 19, 2018). The Judges explained that this approach, if called for expressly in the regulations, would “avoid potential confusion” and “provide more transparency regarding the disposition of unclaimed funds.” 81 Fed. Reg. at 26400; 83 Fed. Reg. at 65262.

32. Pursuant to those rulings, the regulations governing the Section 112 and Section 114 statutory licenses now provide that if SoundExchange cannot identify the Copyright Owner or Performer who is entitled to receive a particular royalty distribution, and if those royalties go unclaimed for three years, then SoundExchange must handle the unclaimed funds “in accordance with applicable federal, state, or common law.” 37 C.F.R. § 380.4(b); 37 C.F.R. § 382.5(b).

33. SoundExchange proposes it instead be allowed to keep the unclaimed funds *for itself*—to defray its *own* administrative costs. *See* SX Proposal at 15 (proposing that SoundExchange “apply the unclaimed funds to offset any deductible under 17 U.S.C. 114(g)(3)”; Bender WDT ¶ 83 (recommending that SoundExchange use unclaimed funds “to pay costs of statutory license administration”).

34. SoundExchange points to recent amendments to the Copyright Act as a purported basis to revise the regulations that govern unclaimed funds. *See* SX Proposal at 15-16; Bender WDT ¶¶ 82-83. But those amendments do not support SoundExchange’s proposal that it be able to retain unclaimed funds for itself. As I understand it, the change to Section 115 of the Copyright Act provides that unclaimed royalties from the mechanical license must be distributed among copyright owners based on usage data, under policies established by the collective, not kept by the collective. *See* 17 U.S.C. § 115(d)(3)(J)(i), (ii).

35. That same result would be appropriate here. SoundExchange’s proposal to line its own pockets with unclaimed royalties is inappropriate, especially when SoundExchange regularly uses those funds to support legislative and litigation efforts against the very parties who are the source of the funds (statutory licensees like Sirius XM). If the regulations regarding unclaimed webcasting royalties are to be revised, then instead of providing a windfall to SoundExchange, the Judges should require that unclaimed funds be distributed among copyright owners based on usage data.

36. Mr. Bender asserts that SoundExchange, as a non-profit entity, could not technically “profit” from using unclaimed royalty payments to defray its own administrative expenses. Bender WDT ¶ 86. But SoundExchange *could* use the availability of unclaimed funds to needlessly and significantly *increase* its administrative expenses, including litigation. Indeed, Mr. Bender acknowledges that these unclaimed funds are “significant money.” *Id.* ¶ 85. That money should be provided to copyright owners and recording artists, not gifted to SoundExchange to expand its administrative operations. SoundExchange’s proposed changes should be rejected.



Before the  
UNITED STATES COPYRIGHT ROYALTY JUDGES  
Washington, D.C.

**In the Matter of**

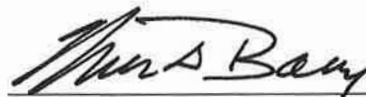
**DETERMINATION OF RATES AND TERMS  
FOR DIGITAL PERFORMANCE OF SOUND  
RECORDINGS AND MAKING OF  
EPHEMERAL COPIES TO FACILITATE  
PERFORMANCES (WEB V)**

**Docket No. 19-CRB-0005-WR  
(2021-2025)**

**DECLARATION OF THOMAS D. BARRY**

I, Thomas D. Barry, declare under penalty of perjury that the statements contained in my Written Rebuttal Testimony in the above-captioned proceeding are true and correct to the best of my knowledge, information, and belief.

Executed this 10th day of January, 2020 in New York, New York.

A handwritten signature in black ink, appearing to read "Thomas D. Barry", written over a horizontal line.

Thomas D. Barry

SXM-PAN Reb. Ex. 1 - SXM-PAN Reb. Ex. 20

RESTRICTED DOCUMENTS

Subject to Protective Order in Docket No. 19-CRB-0005-WR  
(2021-2025) (WEB V)

# Proof of Delivery

I hereby certify that on Tuesday, January 14, 2020, I provided a true and correct copy of the Written Rebuttal Testimony of Sirius XM Radio Inc. and Pandora Media, LLC (PUBLIC VERSION) to the following:

Google Inc., represented by Kenneth L Steinthal, served via Electronic Service at ksteinthal@kslaw.com

SoundExchange, Inc., represented by Previn Warren, served via Electronic Service at pwarren@jenner.com

College Broadcasters, Inc., represented by David D Golden, served via Electronic Service at dgolden@constantinecannon.com

National Public Radio, Inc., represented by Gregory A Lewis, served via Electronic Service at glewis@npr.org

iHeartMedia, Inc., represented by John Thorne, served via Electronic Service at jthorne@kellogghansen.com

Jagjaguwar Inc., represented by Previn Warren, served via Electronic Service at pwarren@jenner.com

American Federation of Musicians of the United States and Canada, The, represented by Previn Warren, served via Electronic Service at pwarren@jenner.com

Warner Music Group Corp., represented by Previn Warren, served via Electronic Service at pwarren@jenner.com

National Association of Broadcasters, represented by Andrew Gass, served via Electronic Service at andrew.gass@lw.com

UMG Recordings, Inc., represented by Previn Warren, served via Electronic Service at pwarren@jenner.com

SAG-AFTRA, represented by Previn Warren, served via Electronic Service at pwarren@jenner.com

Radio Paradise Inc., represented by David Oxenford, served via Electronic Service at doxenford@wbklaw.com

Sony Music Entertainment, represented by Previn Warren, served via Electronic Service at pwarren@jenner.com

American Association of Independent Music ("A2IM"), The, represented by Previn Warren, served via Electronic Service at pwarren@jenner.com

National Religious Broadcasters Noncommercial Music License Committee, represented by Karyn K Ablin, served via Electronic Service at ablin@fhhlaw.com

circle god network inc d/b/a david powell, represented by david powell, served via Electronic Service at davidpowell008@yahoo.com

Corporation for Public Broadcasting, represented by Kenneth L Steintal, served via Electronic Service at ksteintal@kslaw.com

Educational Media Foundation, represented by Jennifer Tatel, served via Electronic Service at jtatel@wbklaw.com

Signed: /s/ Benjamin E. Marks